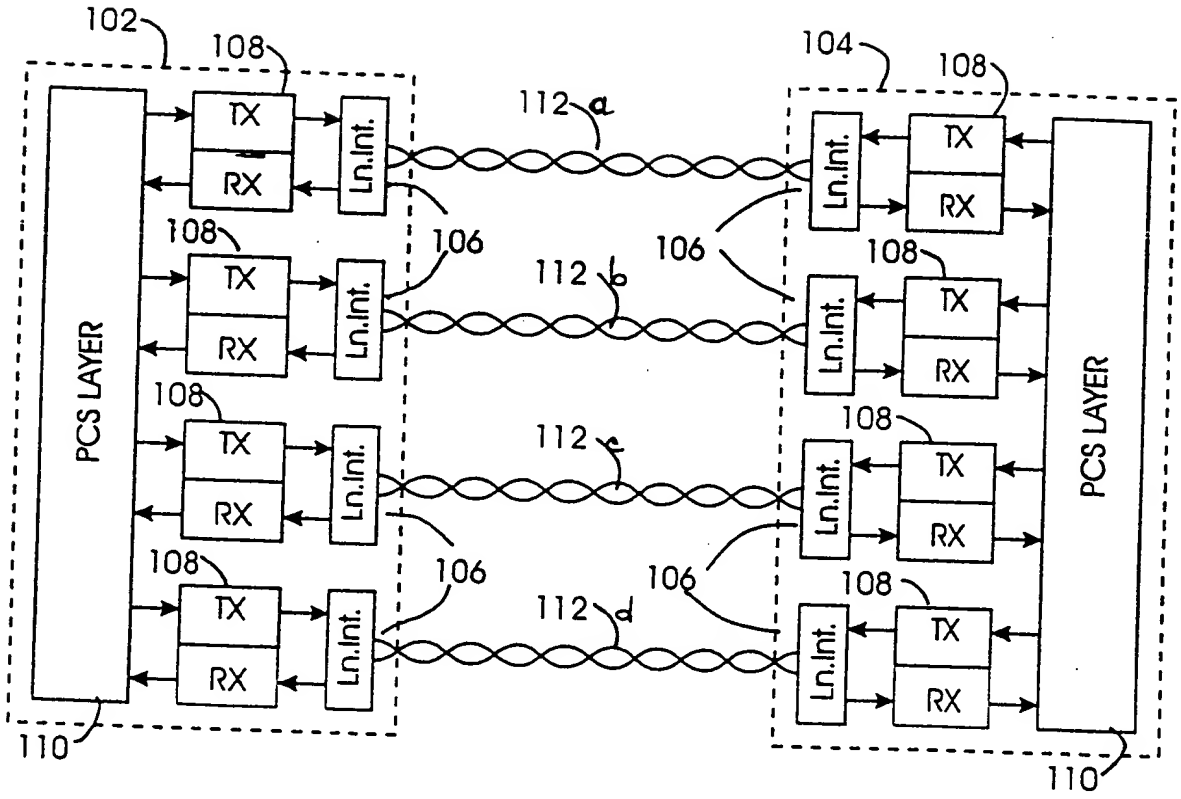


FIG. 1

00t2h0" h2z5560

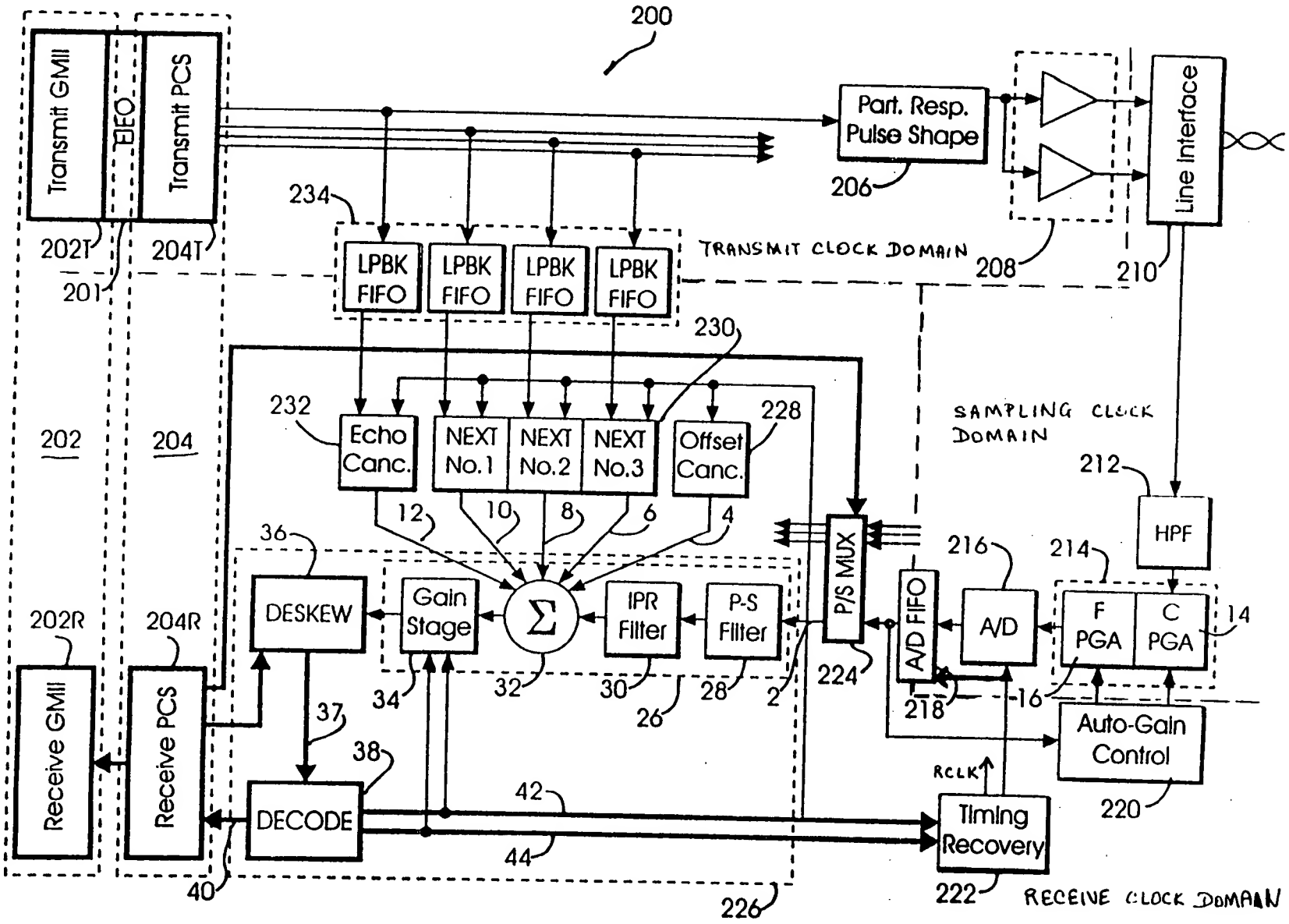


FIG. 2

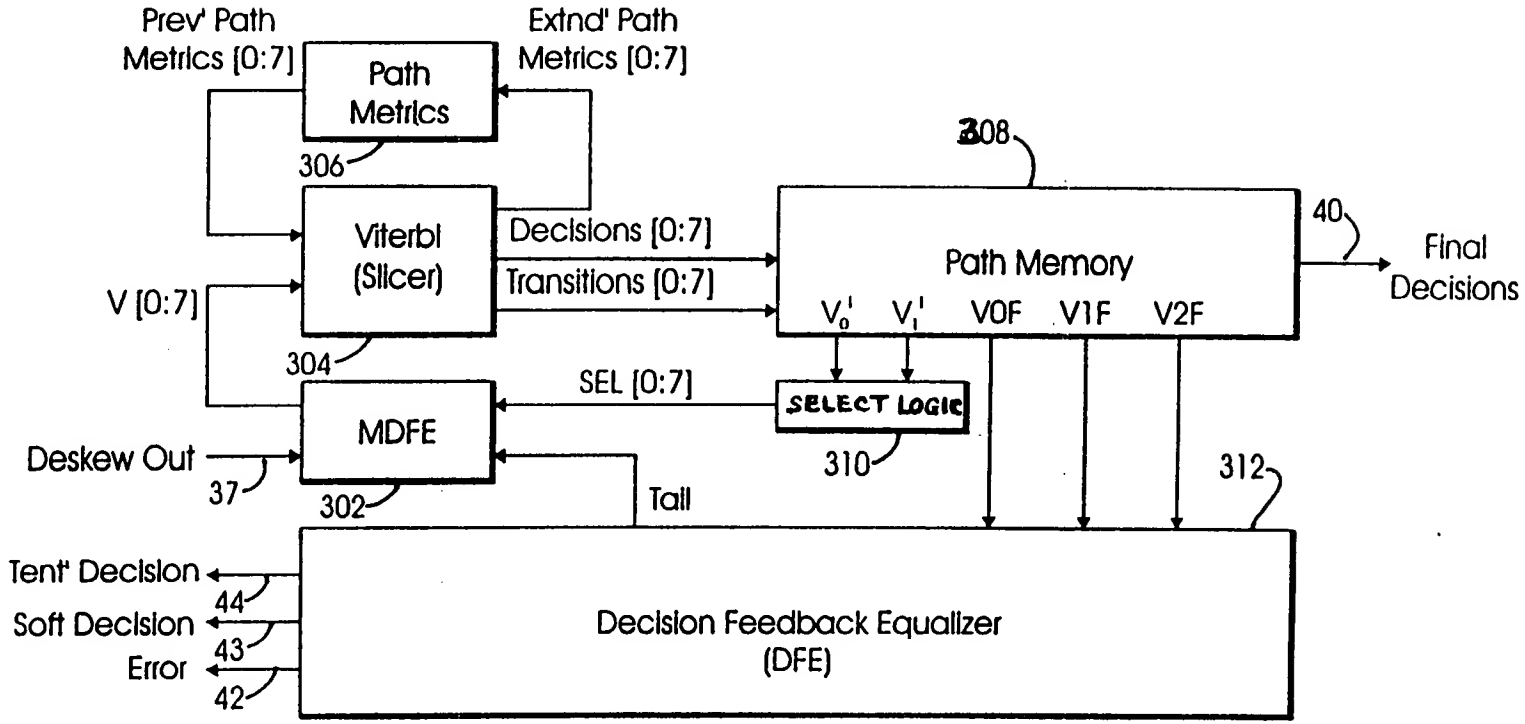

Prev' Path Metrics [0:7]
Extnd' Path Metrics [0:7]
Path Metrics
306
308
Viterbi (Slicer)
304
Decisions [0:7]
Transitions [0:7]
Path Memory
V_0' V_1' V0F V1F V2F
40
Final Decisions
V [0:7]
SEL [0:7]
SELECT LOGIC
310
MDFE
302
Deskew Out
37
Tail
312
Tent' Decision
Soft Decision
Error
44
43
42
Decision Feedback Equalizer (DFE)

FIG. 3

00h2h0"h2275560

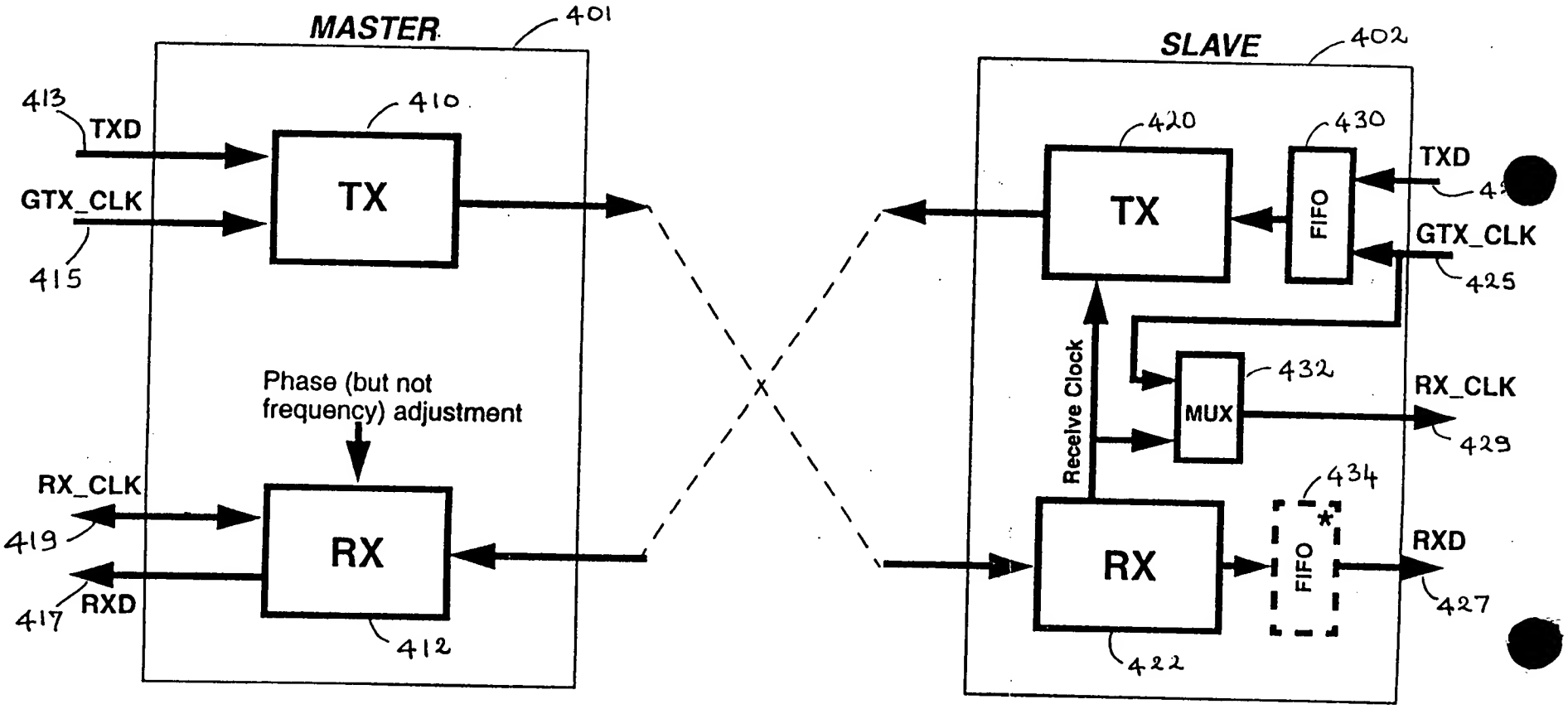


FIG. 4

08/24/01 14:27:56

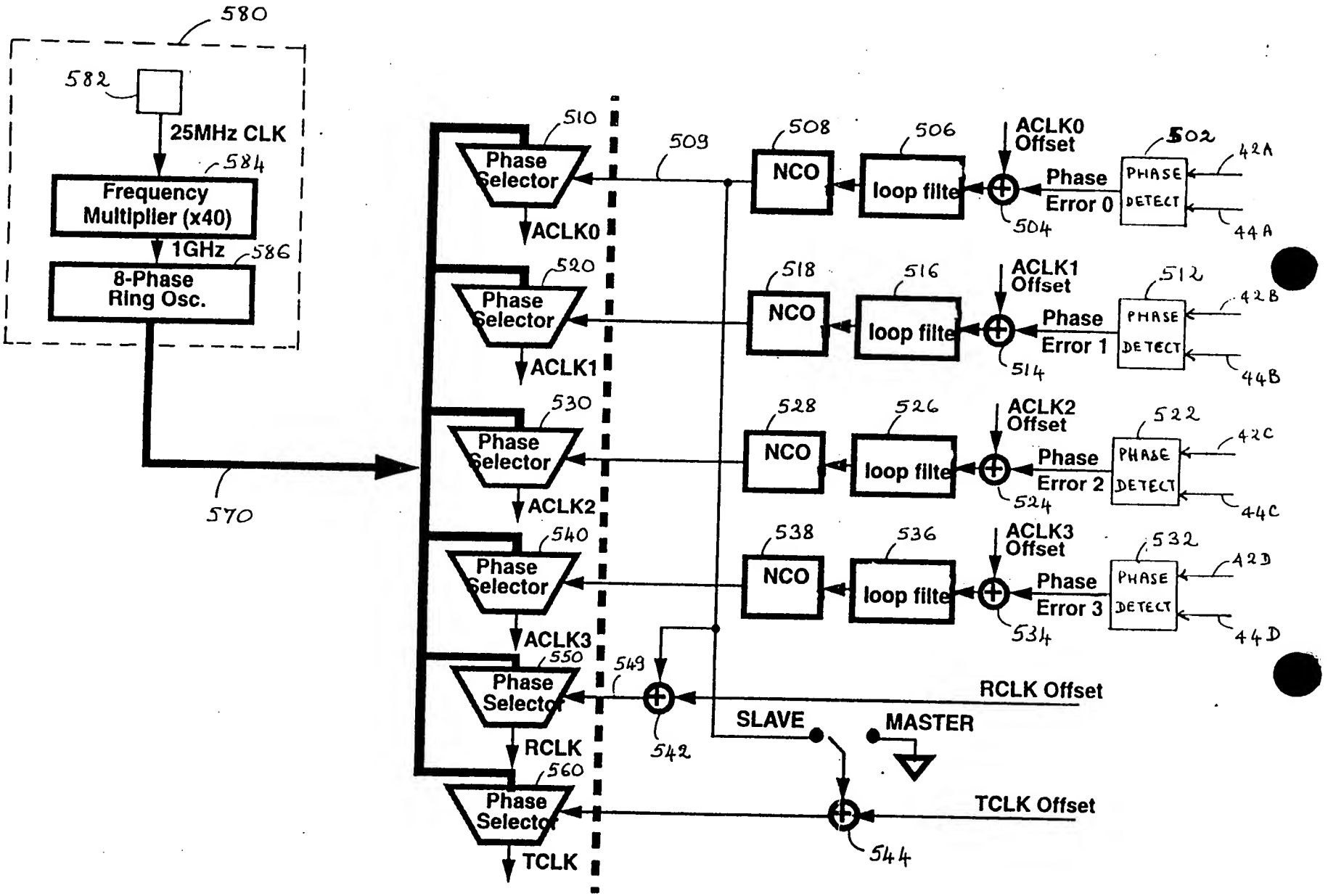


FIG. 5

08h240 "h2275560

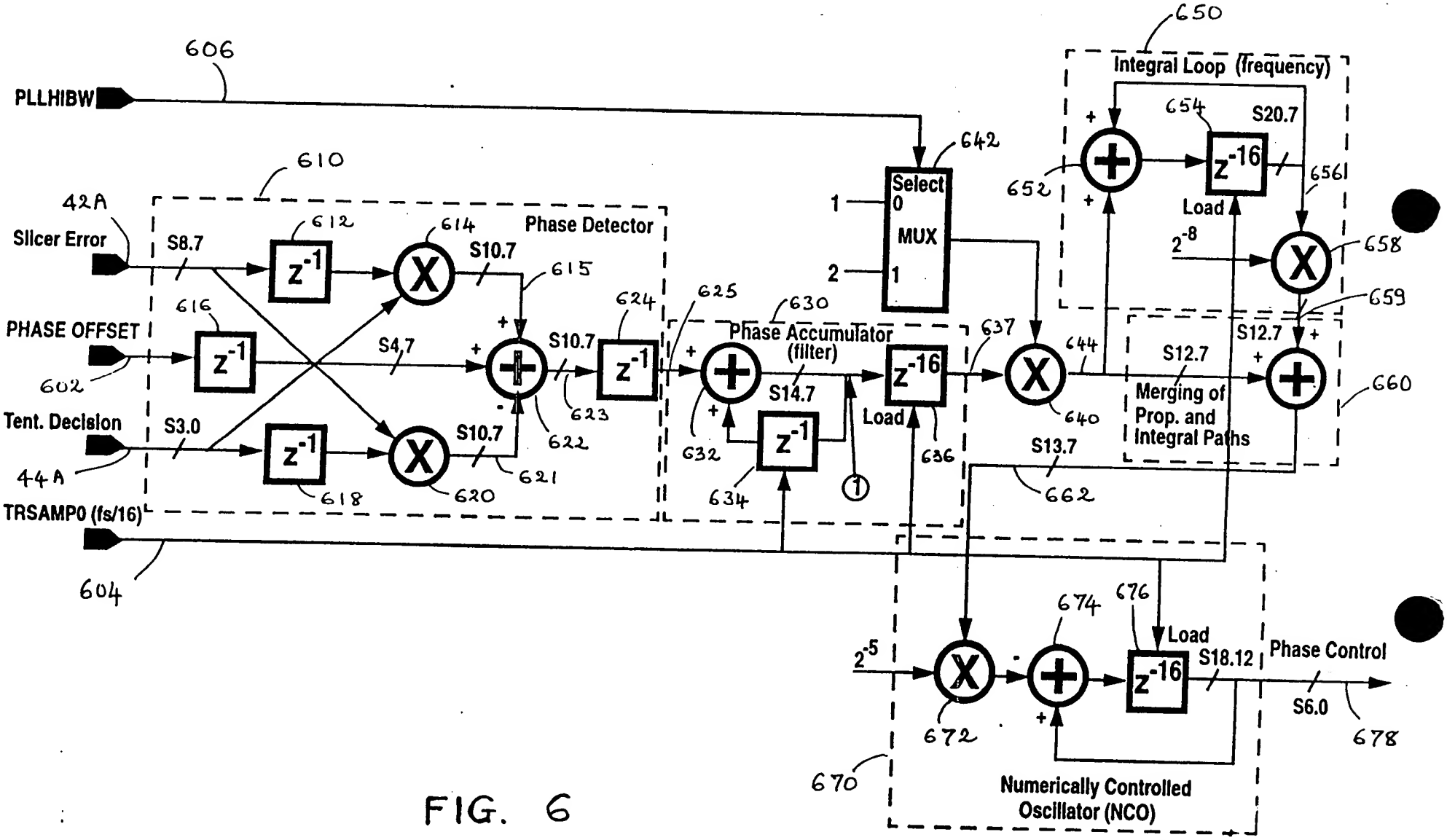


FIG. 6

00h2h0" h2z5560

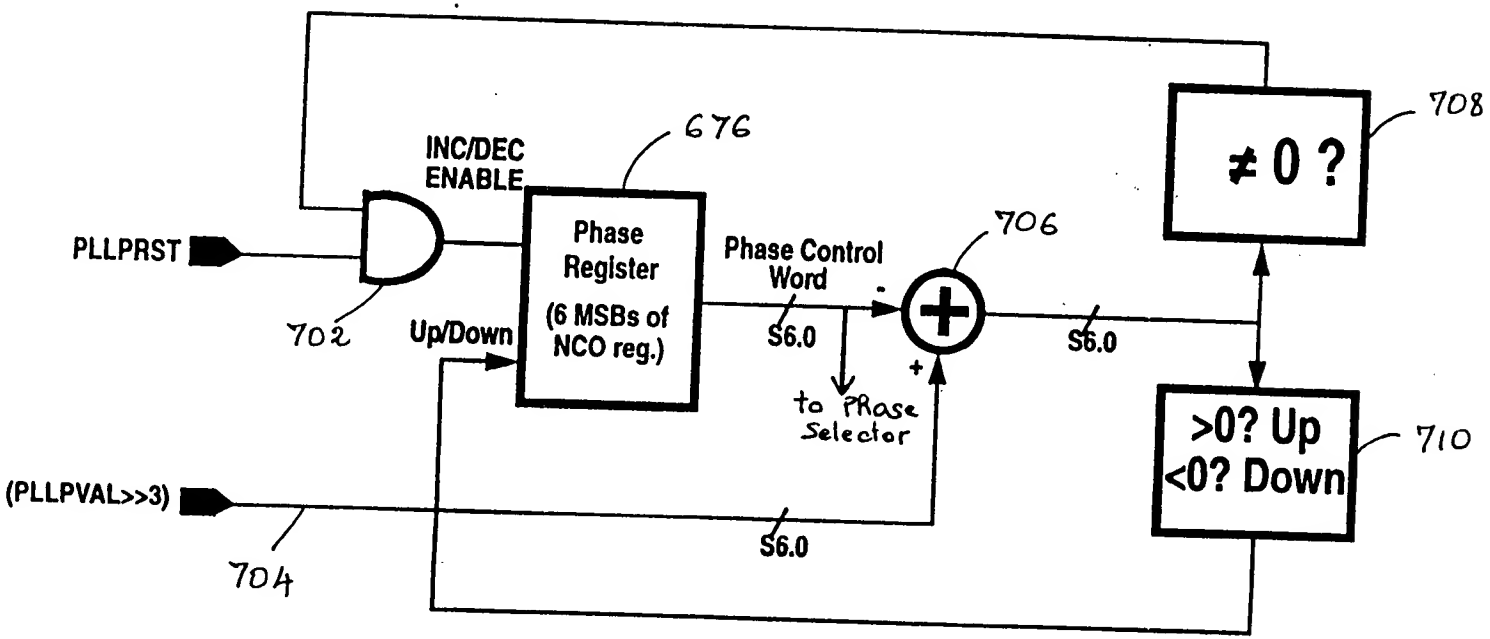


FIG. 7

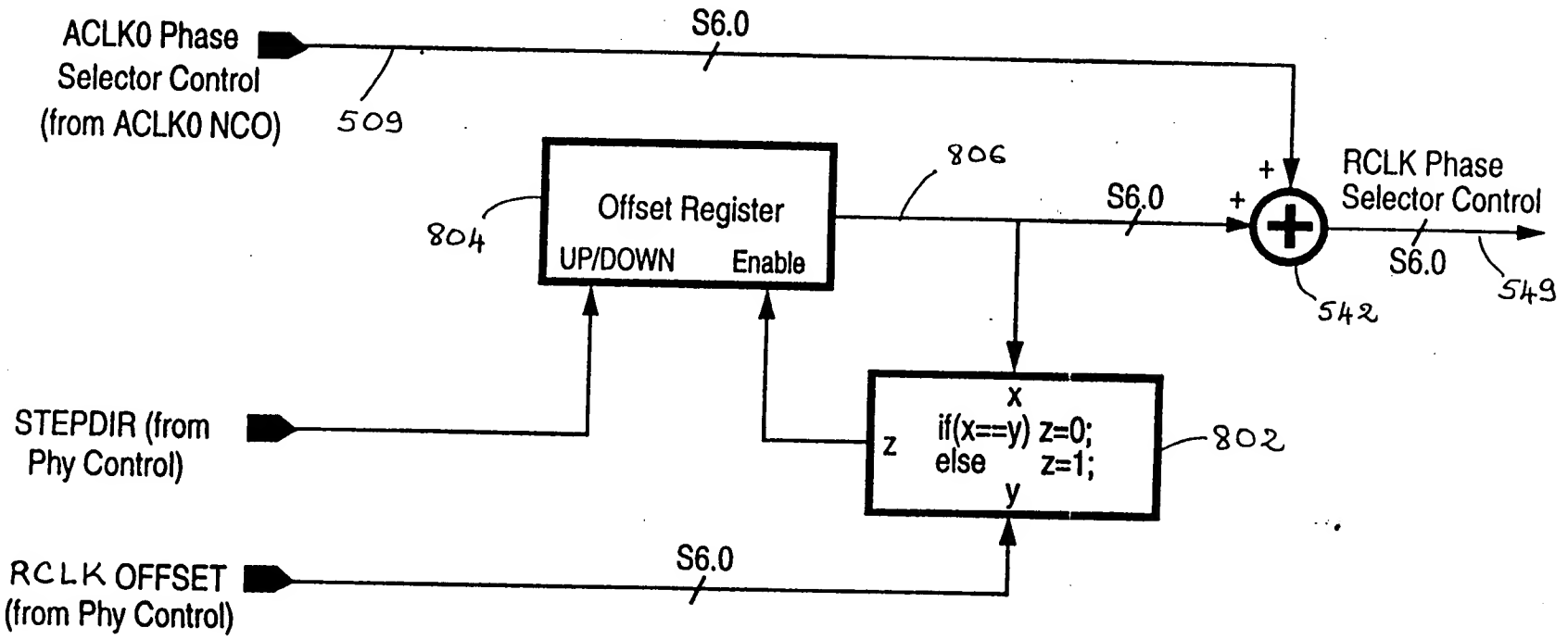

ACLK0 Phase
Selector Control
(from ACLK0 NCO)
509
S6.0
804
Offset Register
UP/DOWN
Enable
806
S6.0
+
+
RCLK Phase
Selector Control
S6.0
549
542
STEPDIR (from
Phy Control)
x
z
if(x==y) z=0;
else z=1;
y
802
RCLK OFFSET
(from Phy Control)
S6.0

FIG. 8

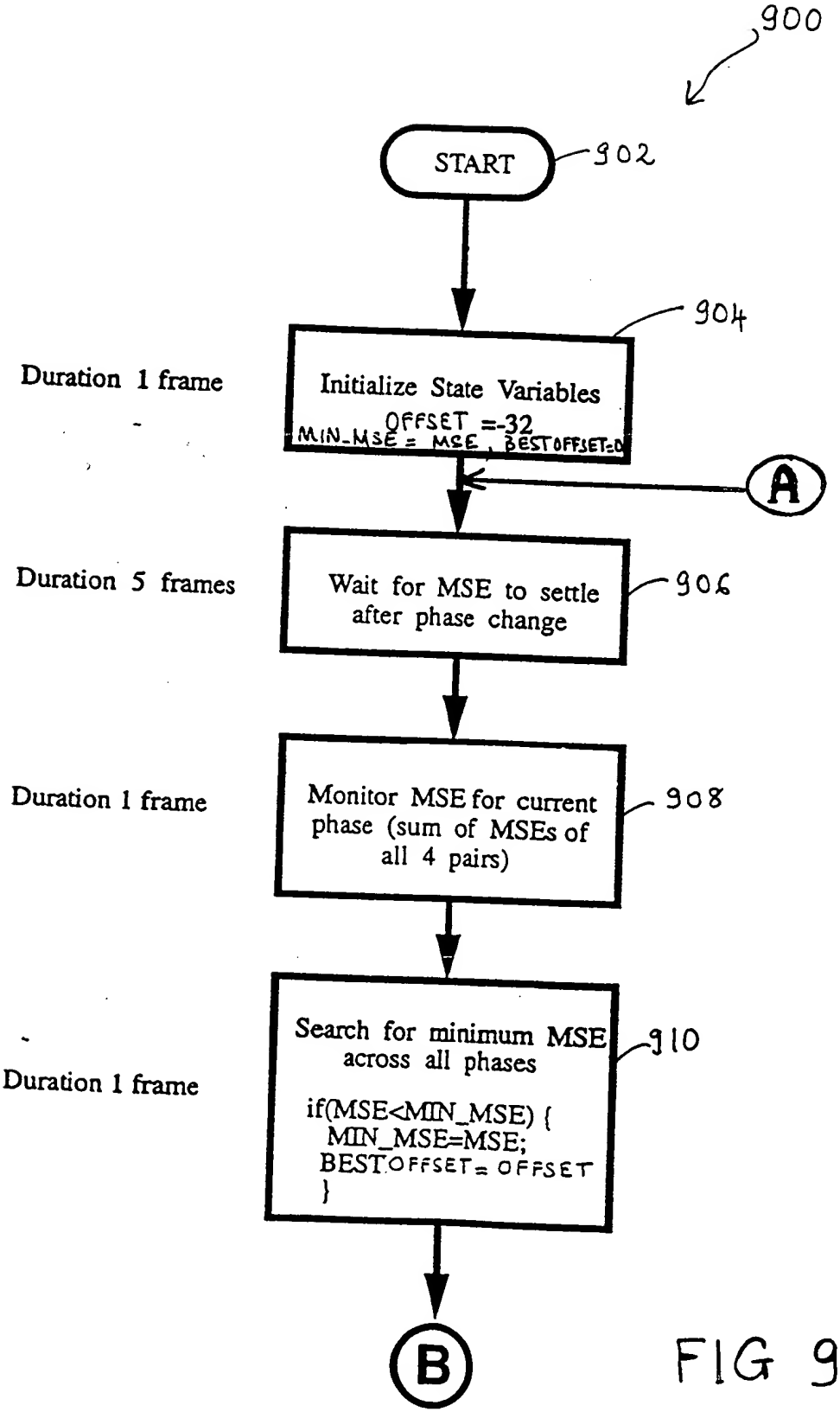


FIG 9 (1 of 2)

0955274-042408

09557254 - 042400

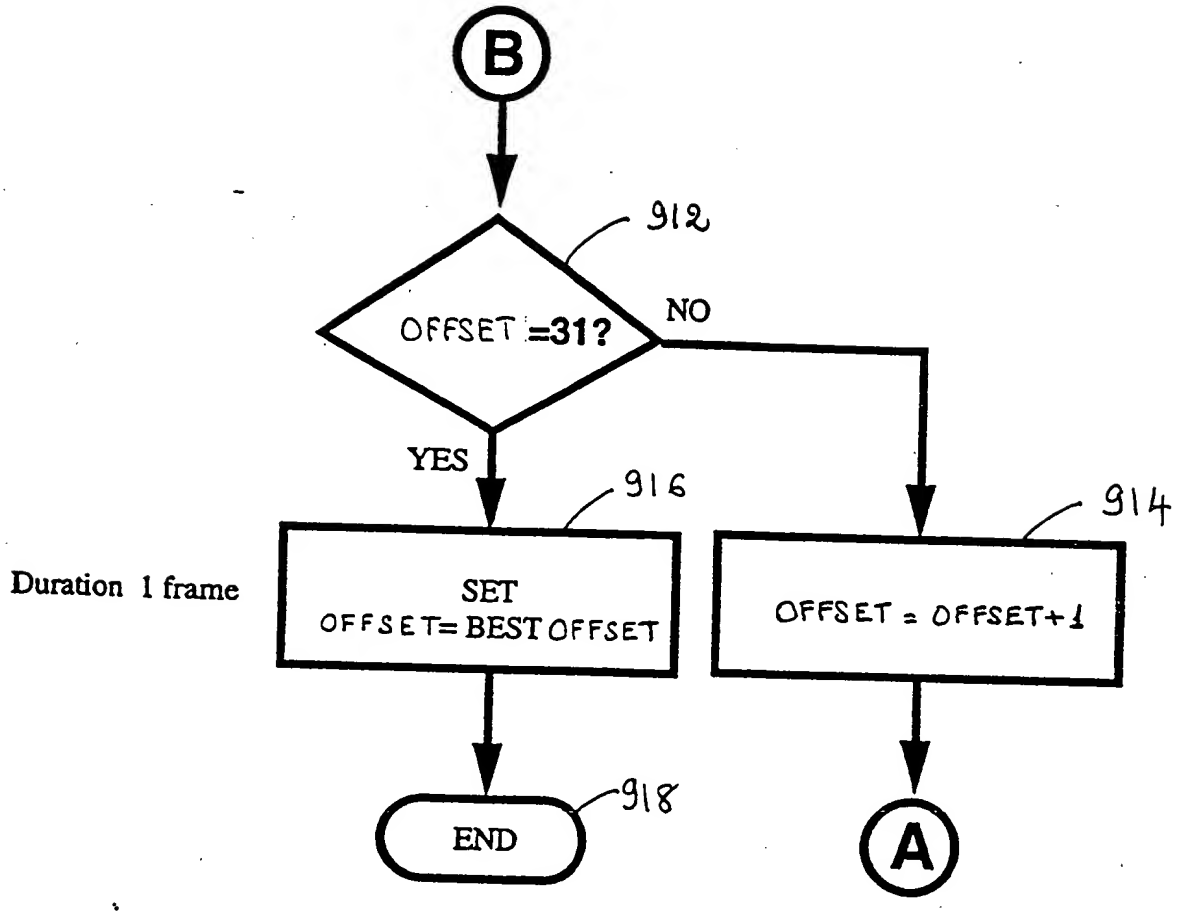


FIG. 9 (2 of 2)

0n240 "h2256O

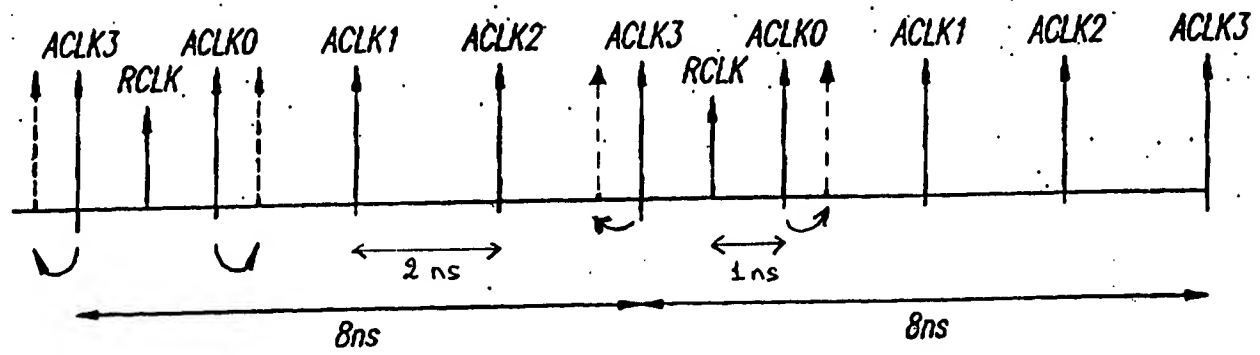


FIG. 10A

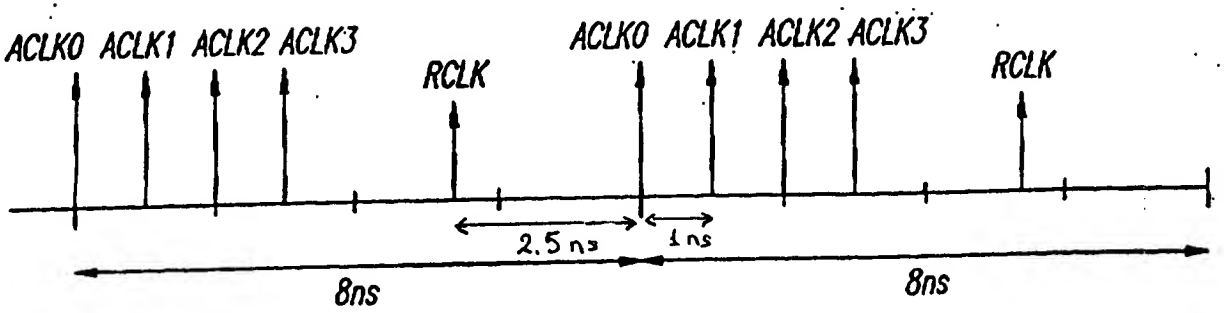


FIG. 10B

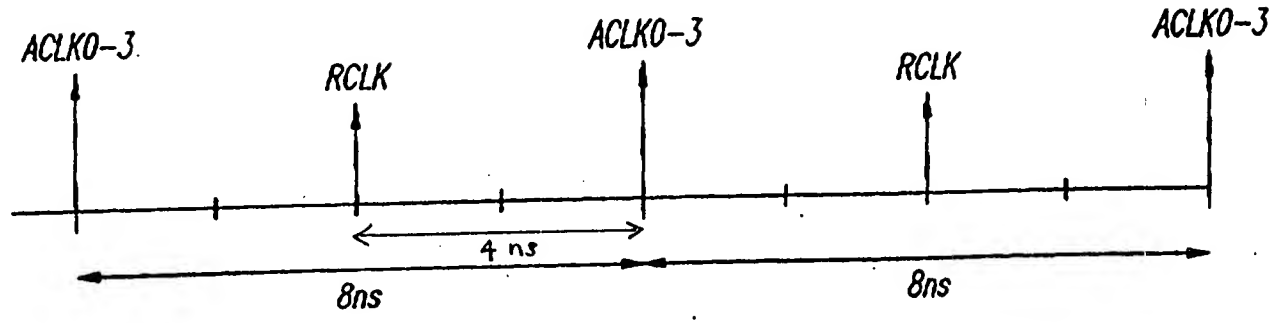


FIG. 10C

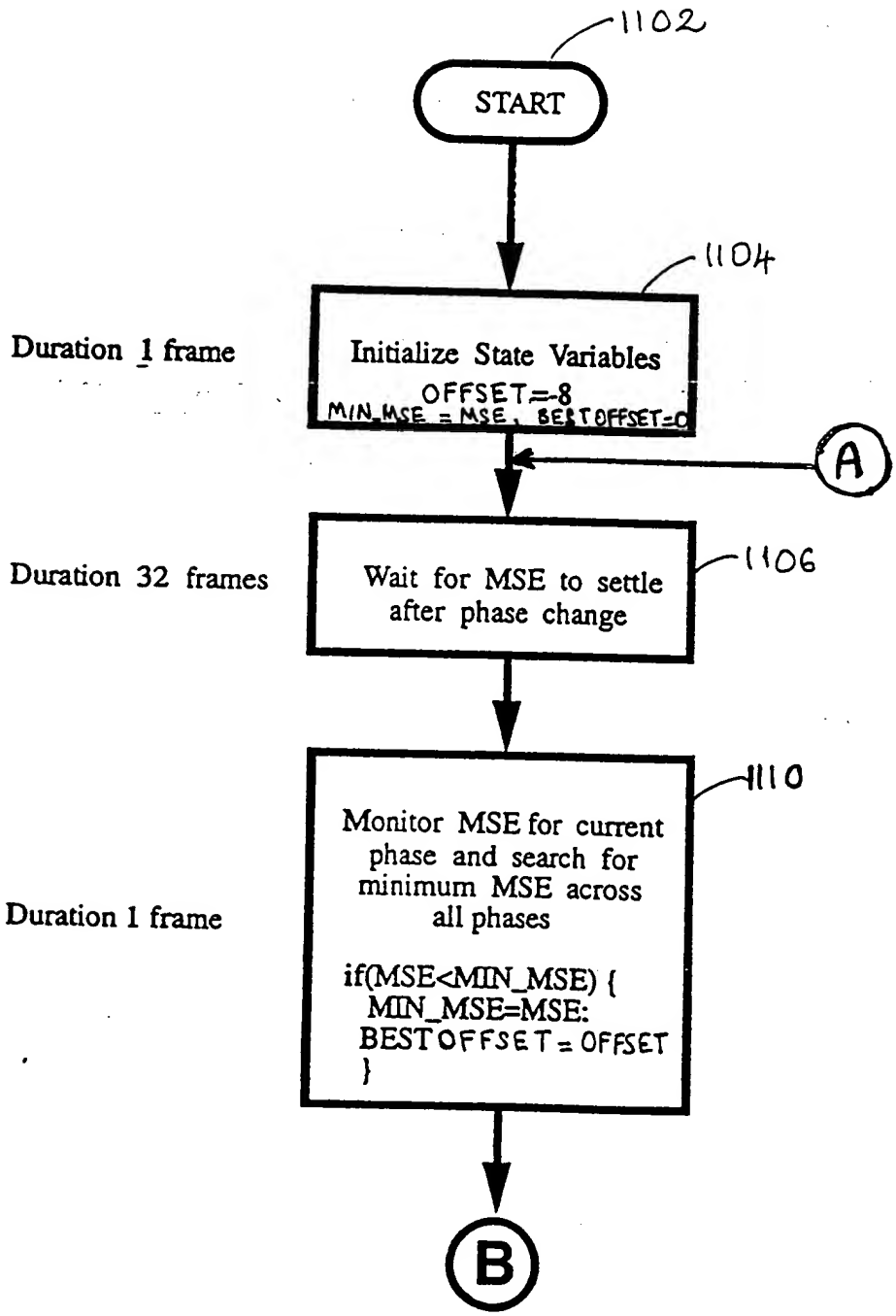

1102
START
1104
Duration 1 frame
Initialize State Variables
OFFSET=-8
MIN_MSE = MSE, BESTOFFSET=0
A
Duration 32 frames
Wait for MSE to settle after phase change
1106
1110
Monitor MSE for current phase and search for minimum MSE across all phases
Duration 1 frame
if(MSE<MIN_MSE) {
MIN_MSE=MSE:
BESTOFFSET = OFFSET
}
B

FIG. 11 (1 of 2)

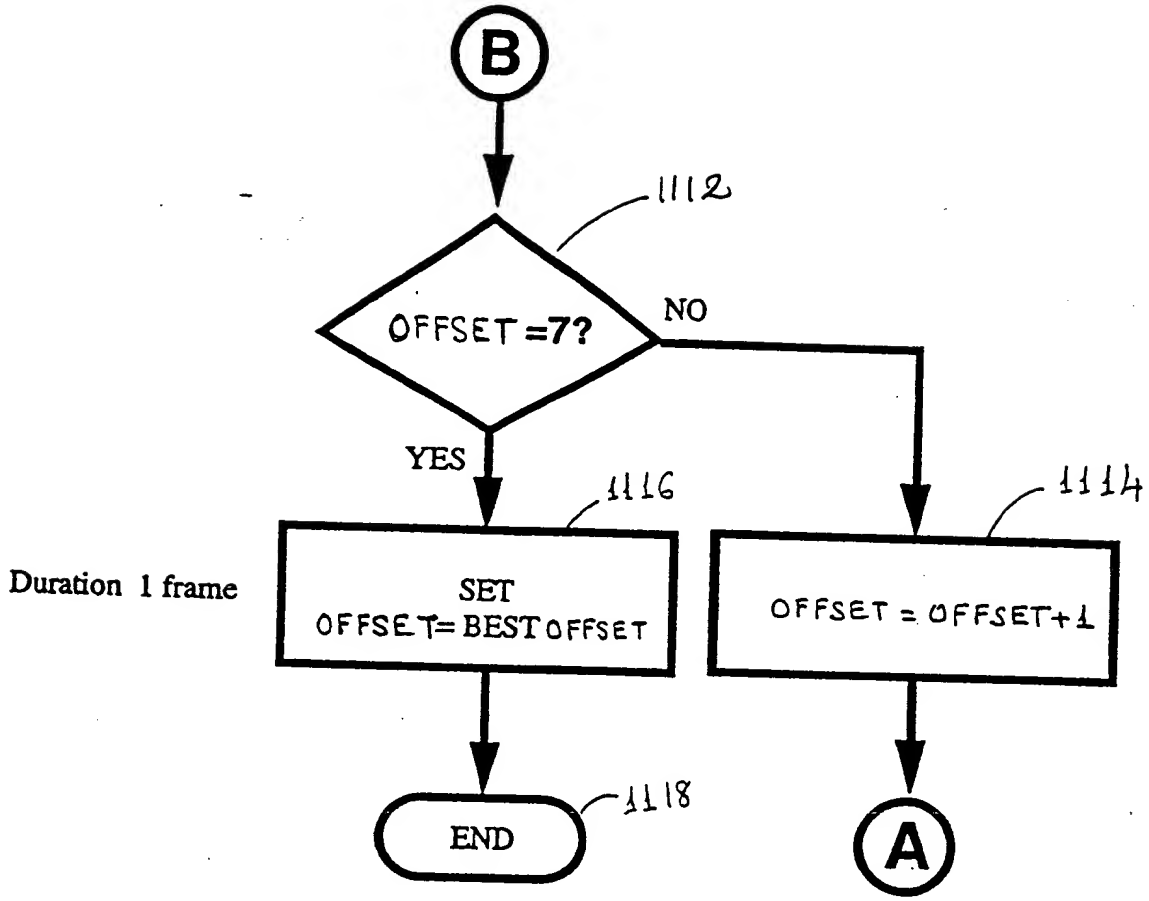

B
1112
OFFSET =7?
NO
YES
1116
1114
Duration 1 frame
SET
OFFSET= BEST OFFSET
OFFSET = OFFSET+1
1118
END
A

FIG. 11 (2 of 2)

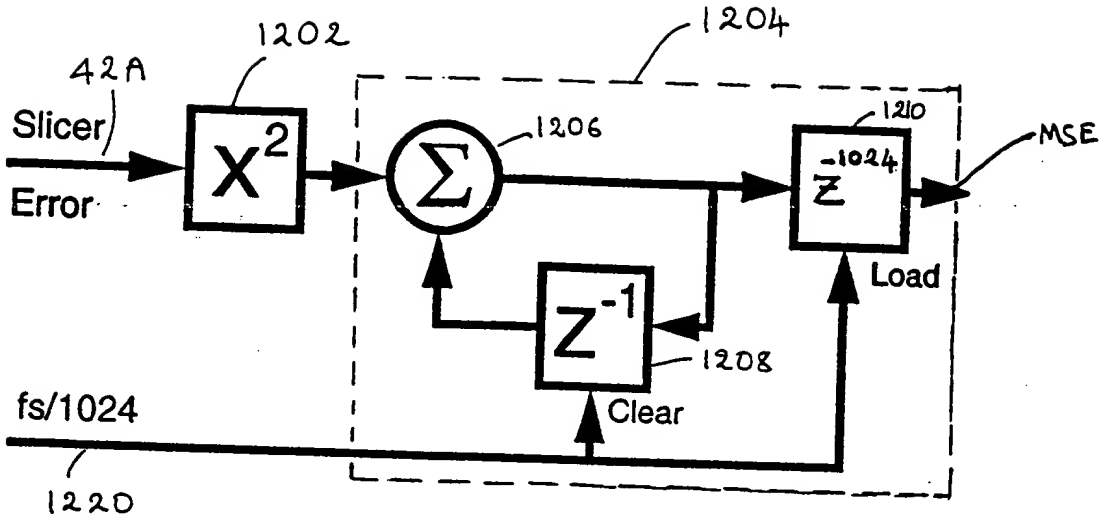


FIG. 12

09552954 - 042400

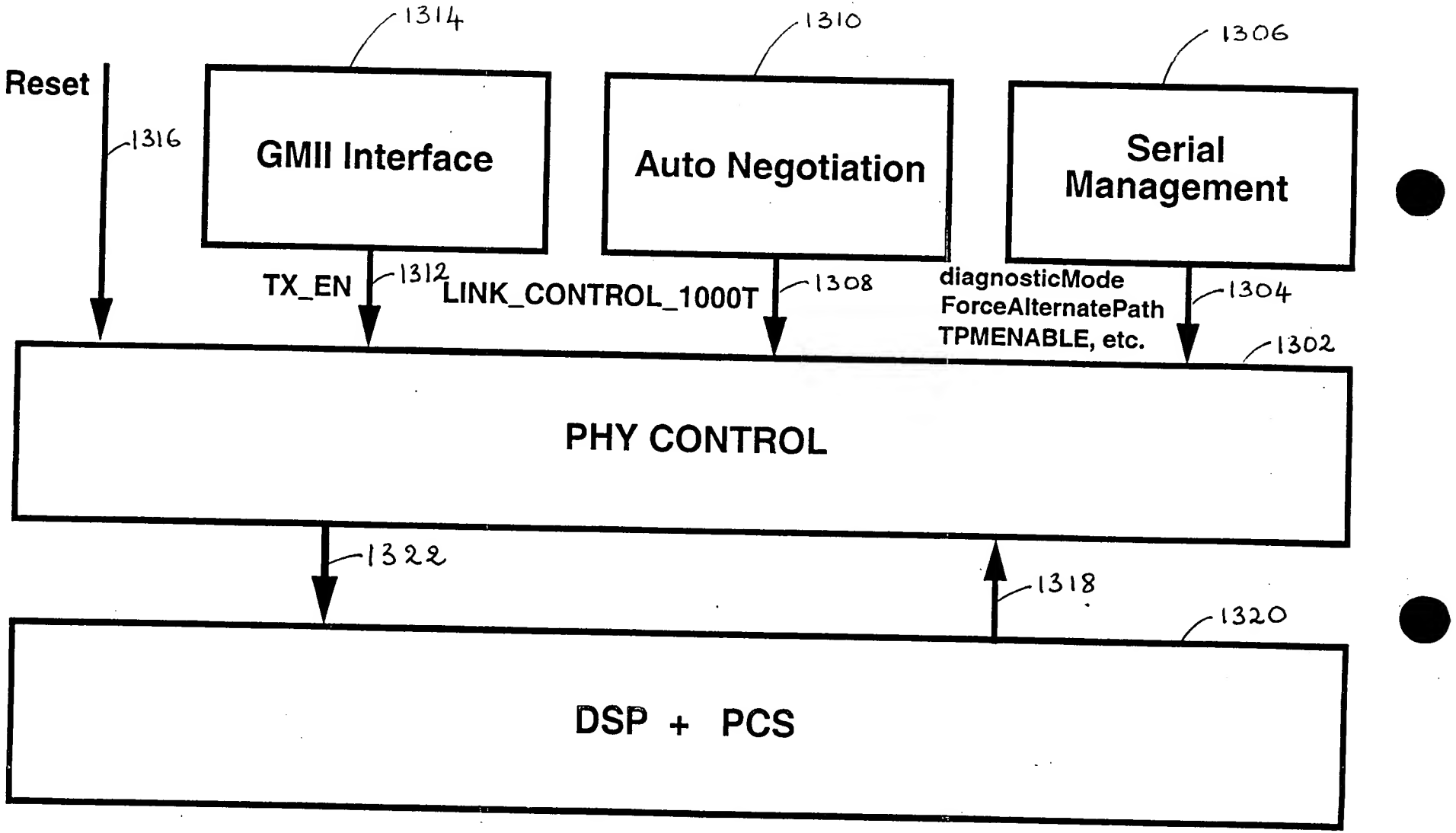

1314
1310
1306
Reset
1316
GMII Interface
Auto Negotiation
Serial Management
TX_EN
1312
LINK_CONTROL_1000T
1308
diagnosticMode
ForceAlternatePath
TPMENABLE, etc.
1304
1302
PHY CONTROL
1322
1318
1320
DSP + PCS

FIG. 13

0th2h0" h2275560

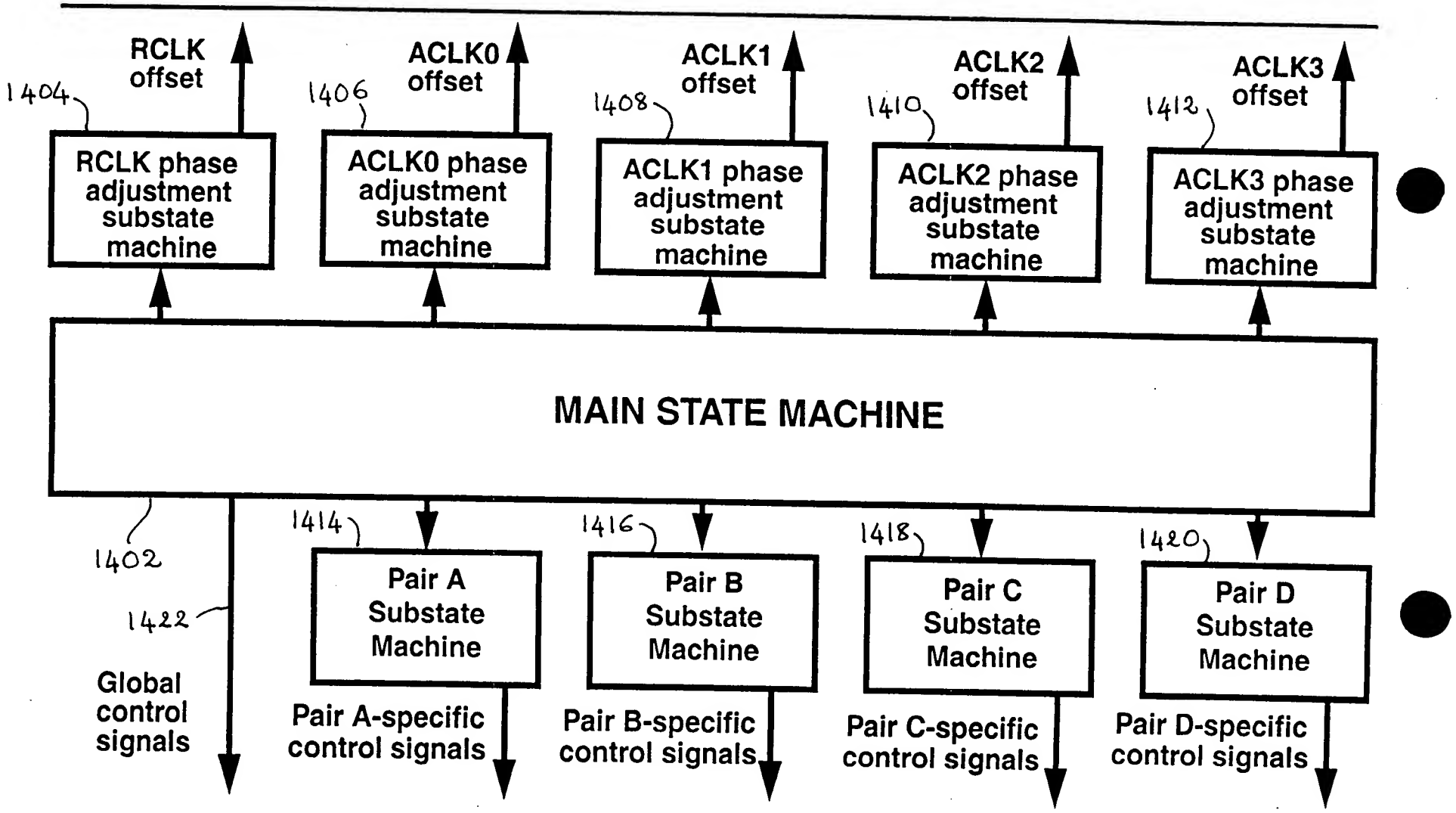
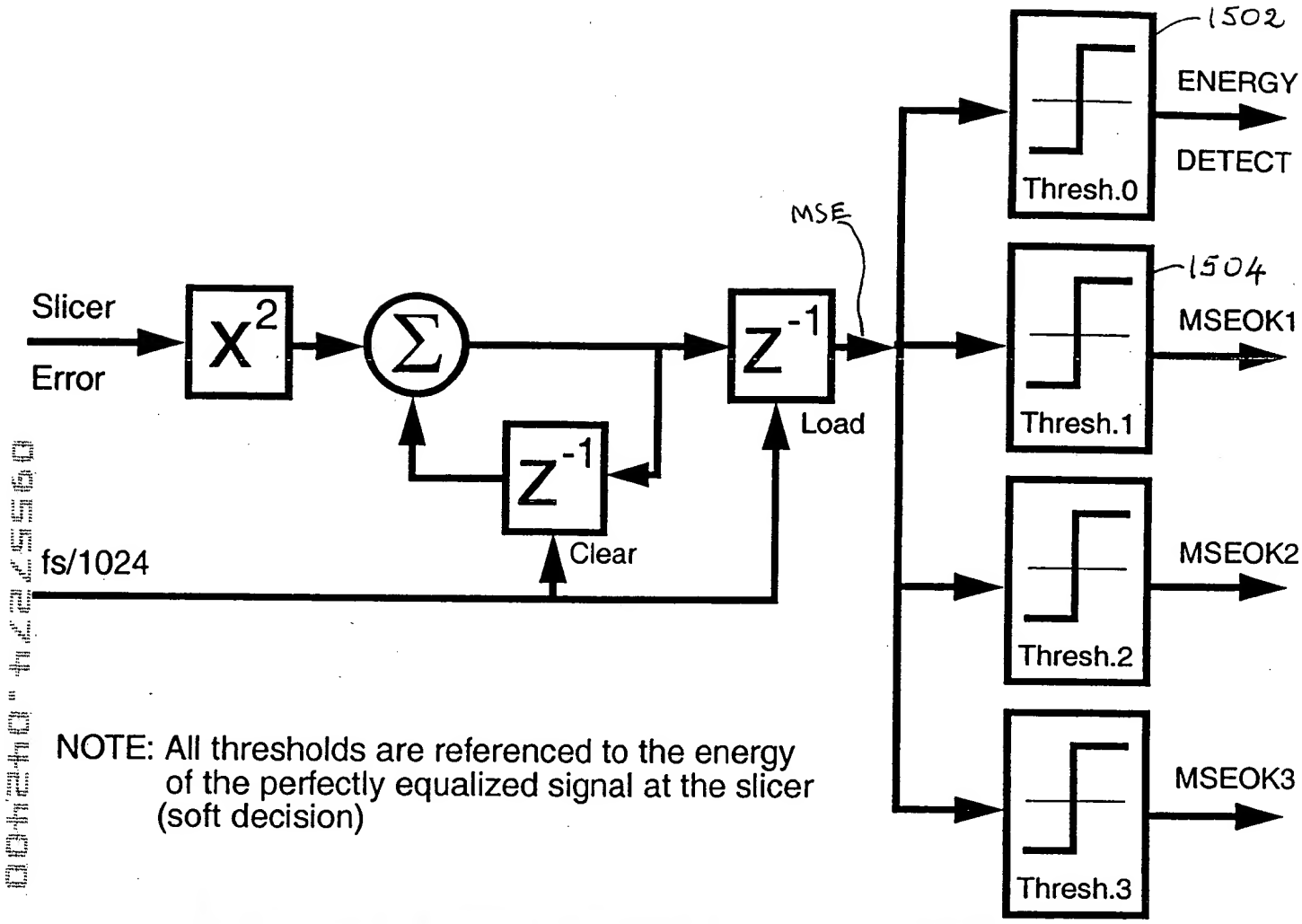


FIG. 14



NOTE: All thresholds are referenced to the energy of the perfectly equalized signal at the slicer (soft decision)

THRESHOLD	VALUE [dB]	FUNCTION
Thresh.0	-20	ENERGY DETECT
Thresh.1	-17	loc_rcvr_status_OK
Thresh.2	-12	frequency recovery
Thresh.3 (1)	-22.8 (SER=1e-13)	Quality Indicator
Thresh.3 (2)	-22.5 (SER=1e-12)	Quality Indicator
Thresh.3 (3)	-22.0 (SER=1e-11)	Quality Indicator (default)
Thresh.3 (4)	-21.5 (SER=1e-10)	Quality Indicator

FIG. 15

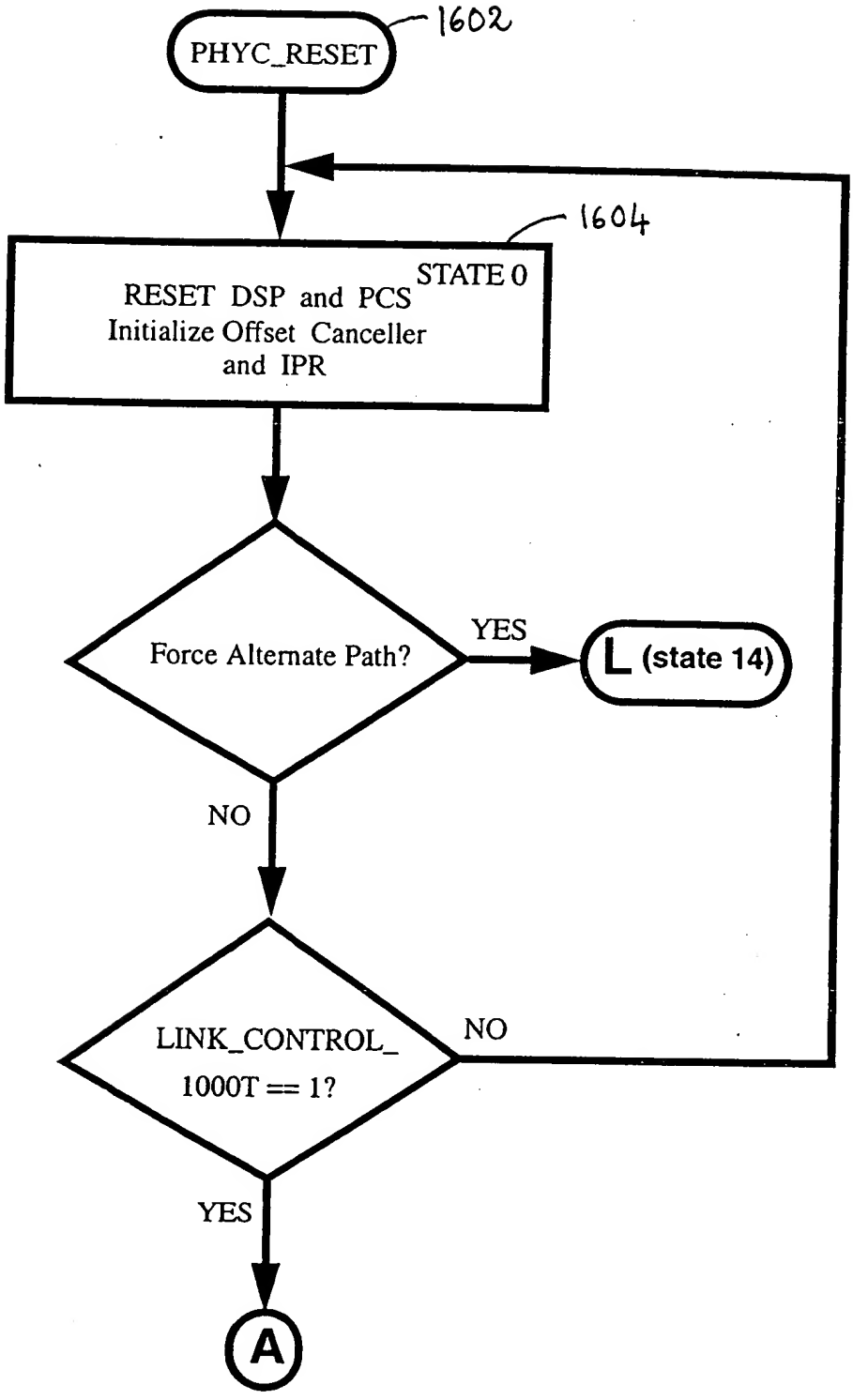

PHYC_RESET
1602
1604
STATE 0
RESET DSP and PCS
Initialize Offset Canceller
and IPR
Force Alternate Path?
YES
L (state 14)
NO
LINK_CONTROL_
1000T == 1?
NO
YES
A

FIG. 16A

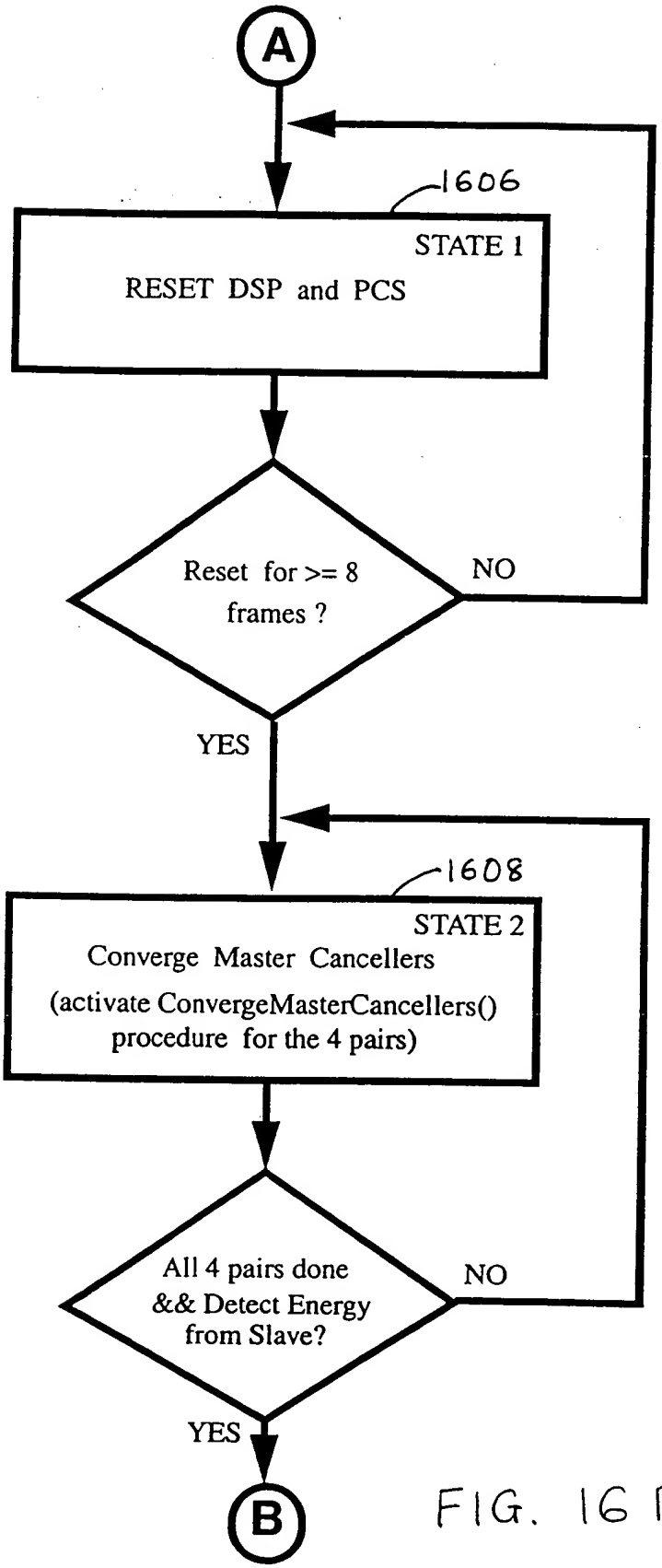

A
1606
STATE 1
RESET DSP and PCS
Reset for >= 8 frames ?
NO
YES
1608
STATE 2
Converge Master Cancellers
(activate ConvergeMasterCancellers() procedure for the 4 pairs)
All 4 pairs done && Detect Energy from Slave?
NO
YES
B

FIG. 16 B

08552474 - 040400

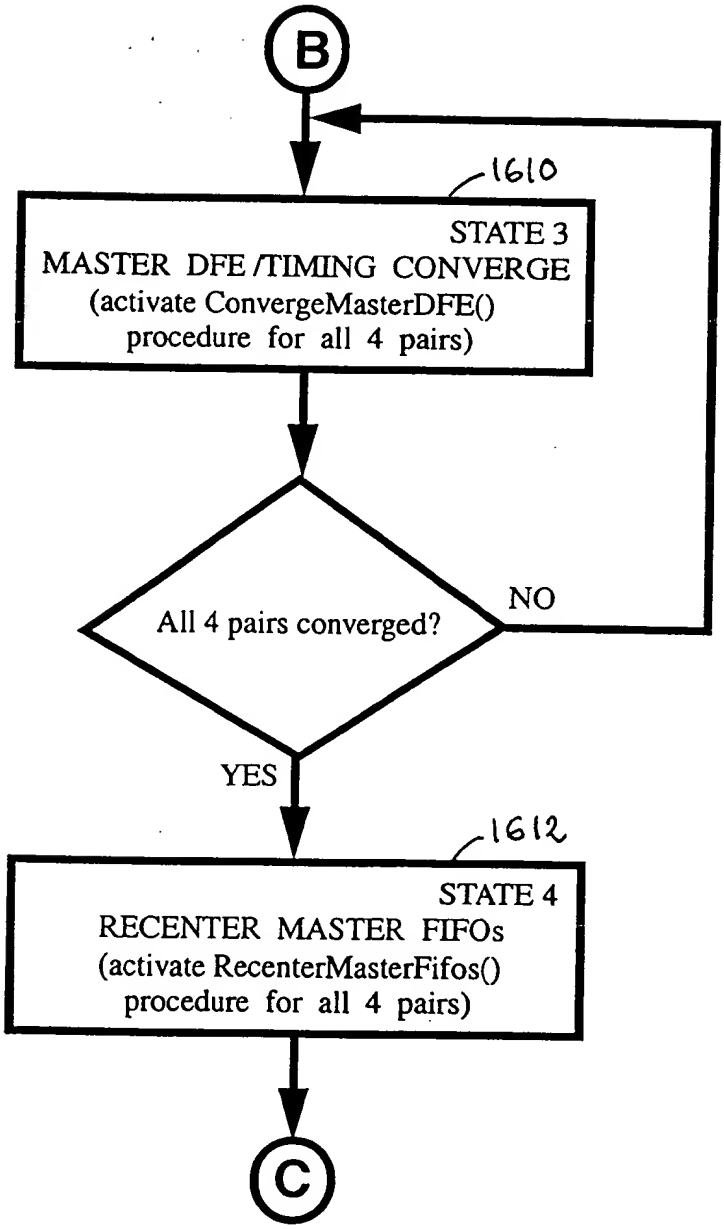


FIG. 16C

08042750

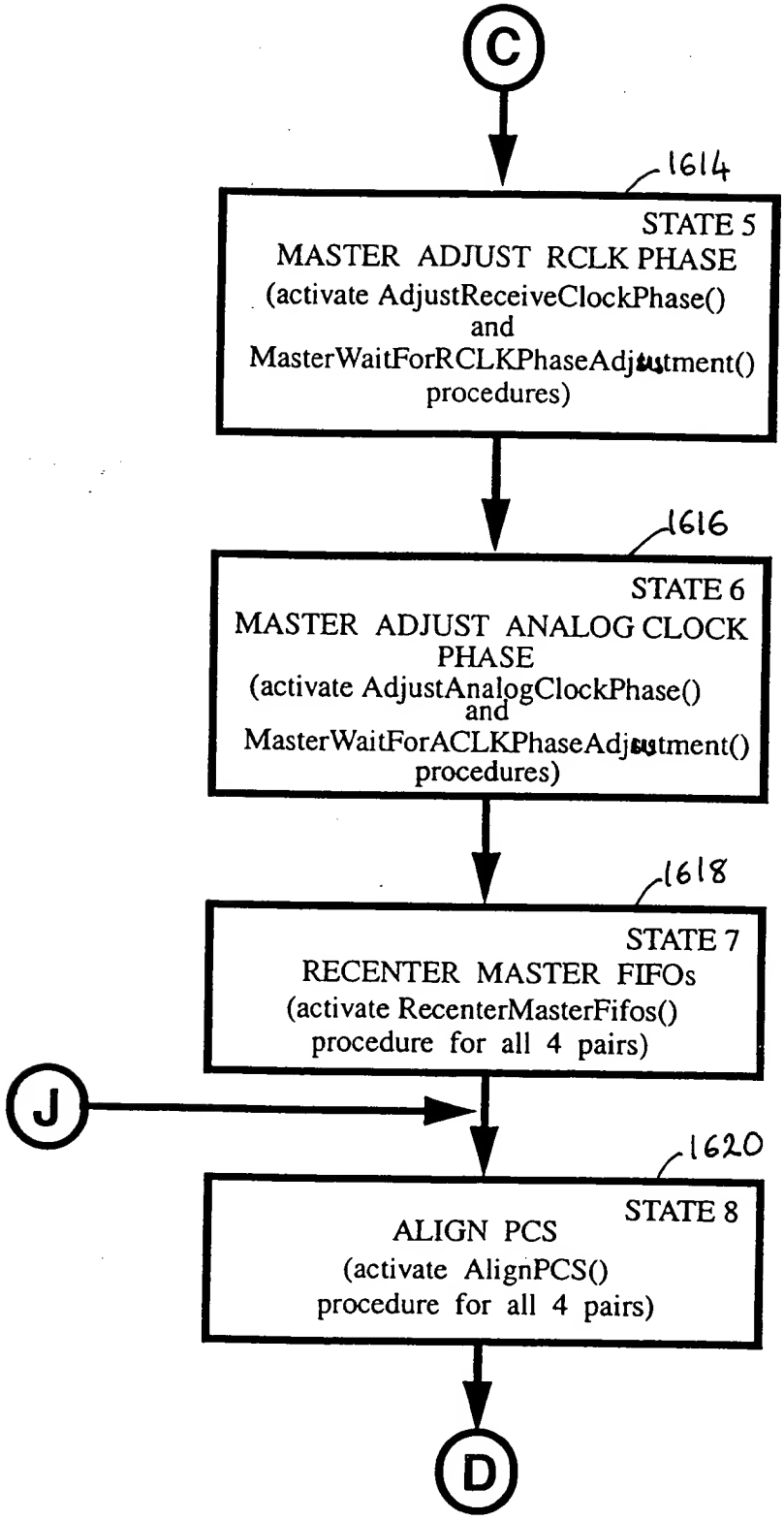


FIG. 16D

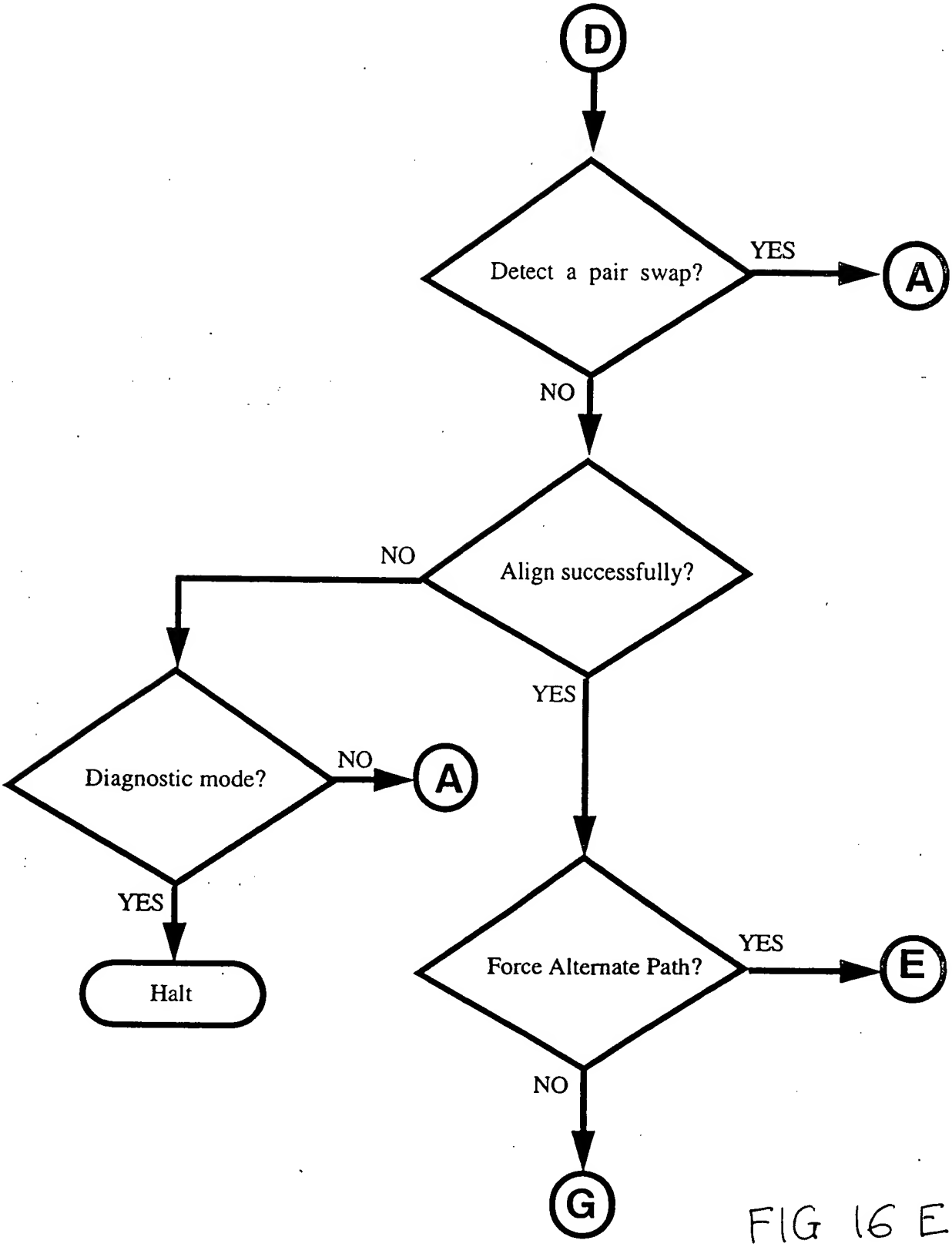

D
Detect a pair swap?
YES
A
NO
Align successfully?
NO
YES
Diagnostic mode?
NO
A
YES
Halt
Force Alternate Path?
YES
E
NO
G

FIG 16 E

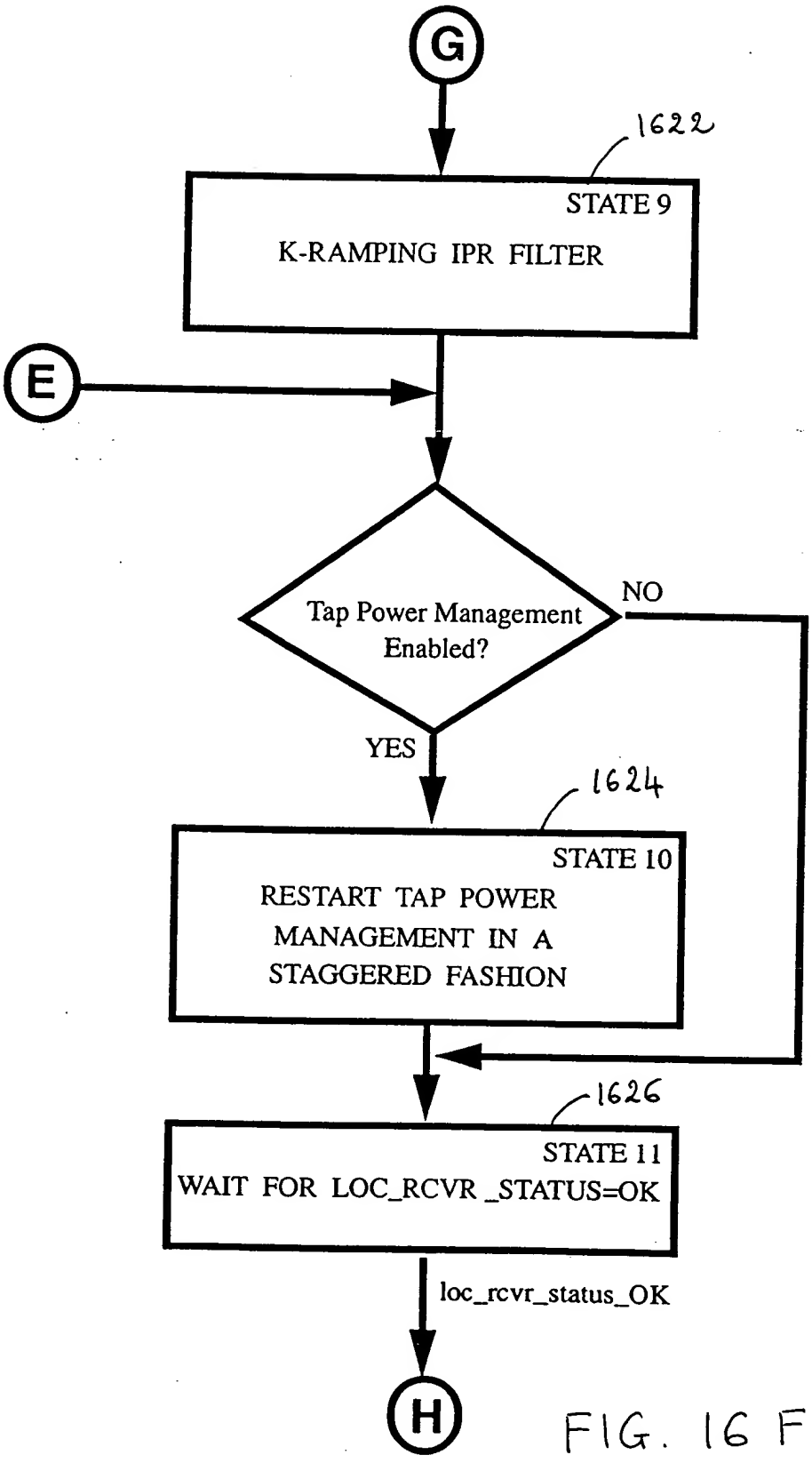

G
1622
STATE 9
K-RAMPING IPR FILTER
E
Tap Power Management Enabled?
NO
YES
1624
STATE 10
RESTART TAP POWER MANAGEMENT IN A STAGGERED FASHION
1626
STATE 11
WAIT FOR LOC_RCVR _STATUS=OK
loc_rcvr_status_OK
H

FIG. 16 F

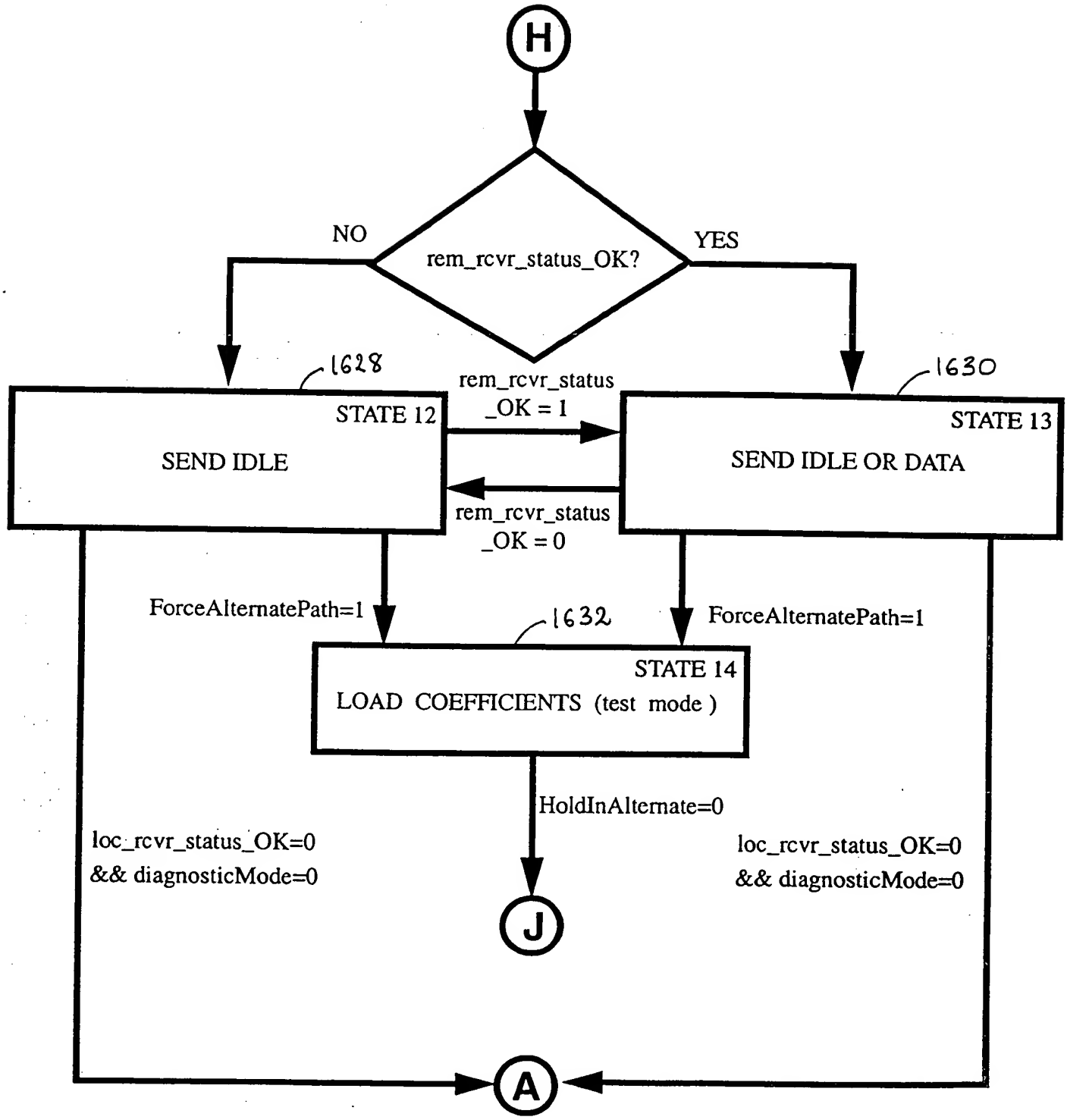

H
rem_rcvr_status_OK?
NO
YES
1628
STATE 12
SEND IDLE
rem_rcvr_status
_OK = 1
rem_rcvr_status
_OK = 0
1630
STATE 13
SEND IDLE OR DATA
ForceAlternatePath=1
ForceAlternatePath=1
1632
STATE 14
LOAD COEFFICIENTS (test mode)
HoldInAlternate=0
loc_rcvr_status_OK=0
&& diagnosticMode=0
loc_rcvr_status_OK=0
&& diagnosticMode=0
J
A

FIG. 16G

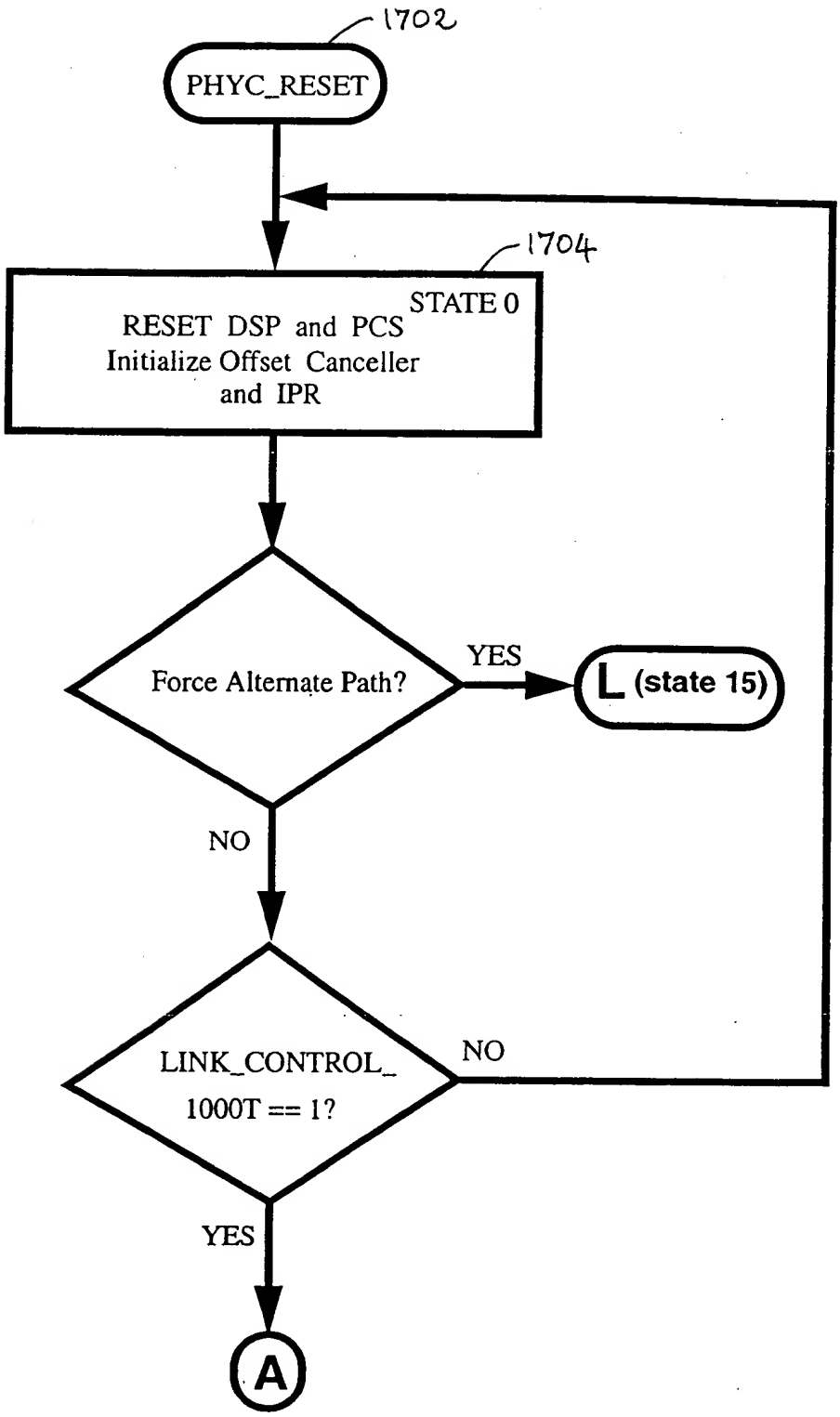

1702
PHYC_RESET
1704
STATE 0
RESET DSP and PCS
Initialize Offset Canceller
and IPR
Force Alternate Path?
YES
L (state 15)
NO
LINK_CONTROL_
1000T == 1?
NO
YES
A

FIG. 17A

09552749 040200

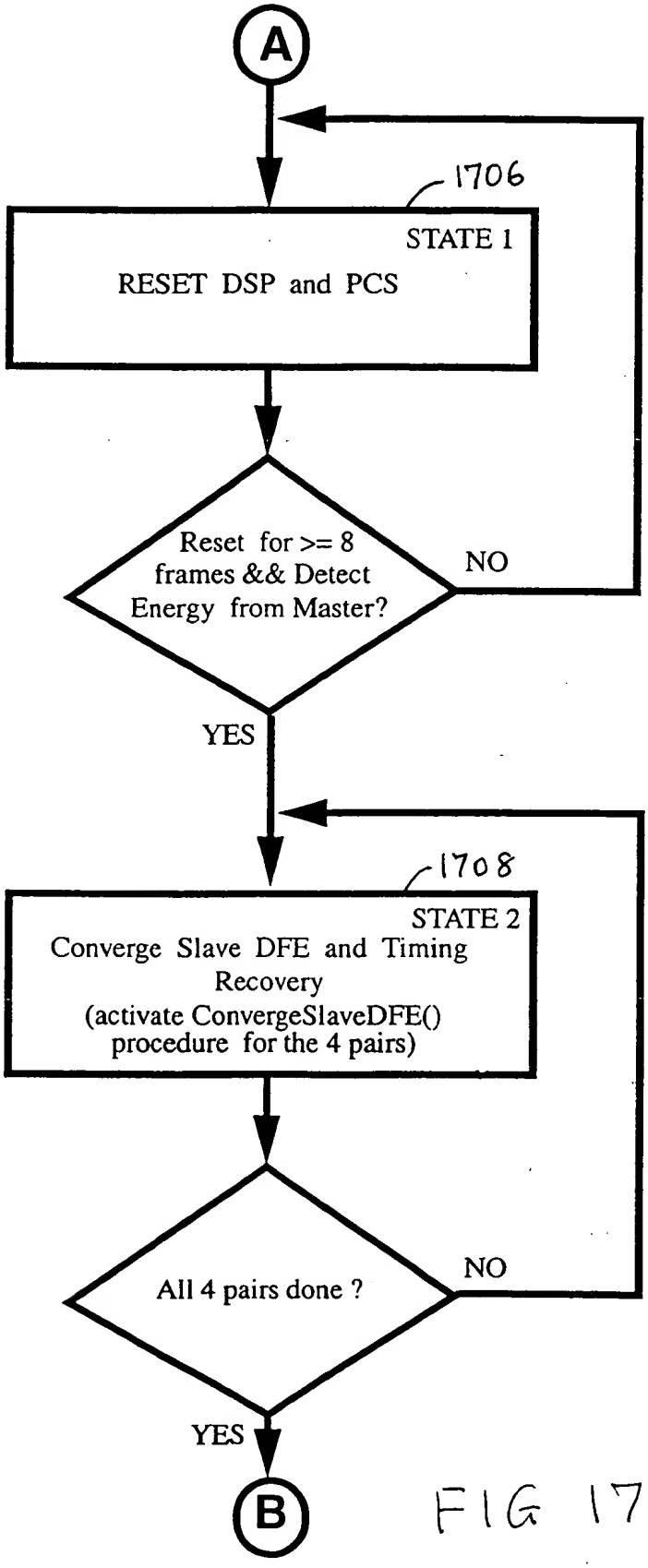


FIG 17B

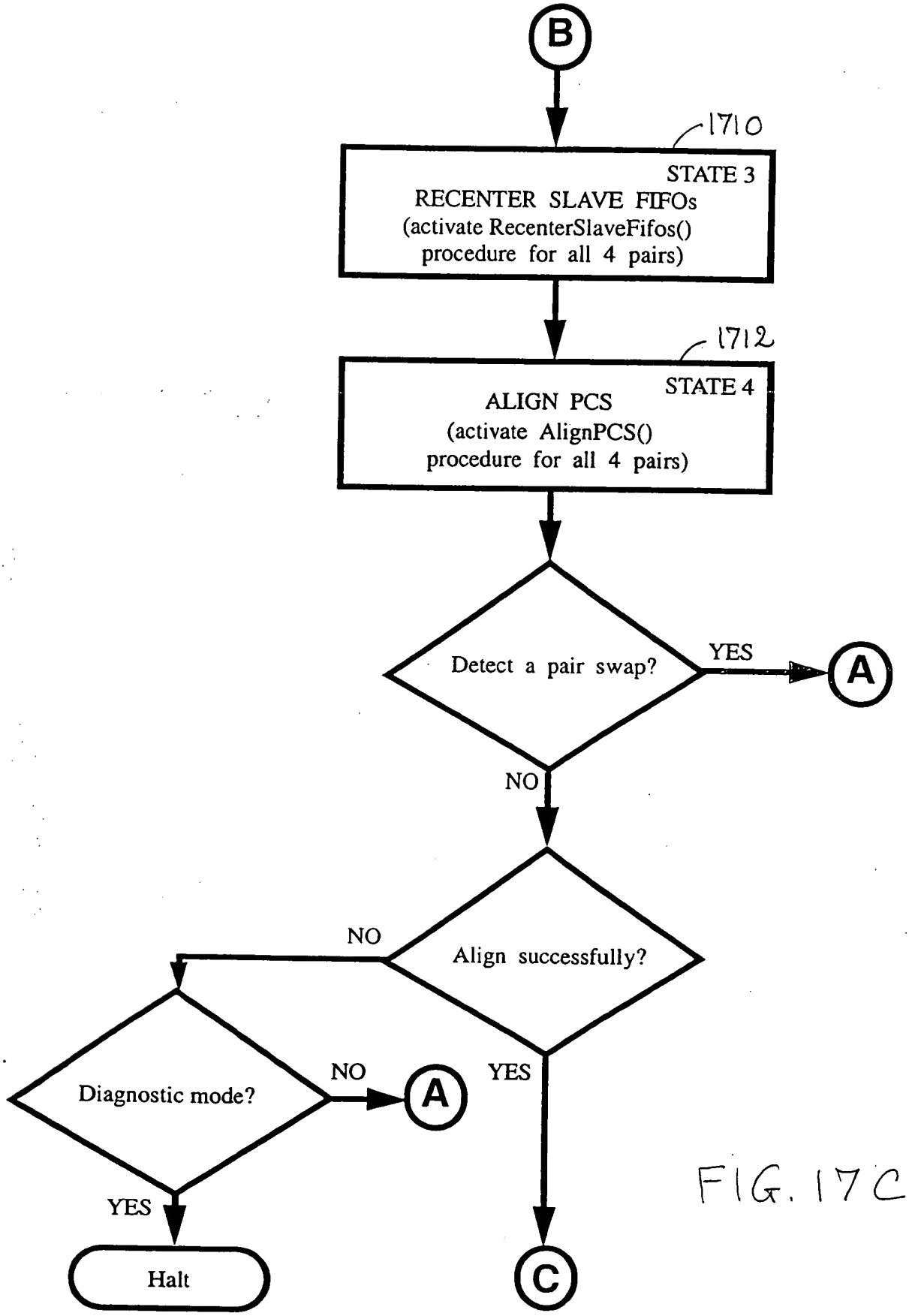

B
1710
STATE 3
RECENTER SLAVE FIFOs
(activate RecenterSlaveFifos()
procedure for all 4 pairs)
1712
STATE 4
ALIGN PCS
(activate AlignPCS()
procedure for all 4 pairs)
Detect a pair swap?
YES
A
NO
Align successfully?
NO
YES
Diagnostic mode?
NO
A
YES
Halt
C

FIG. 17C

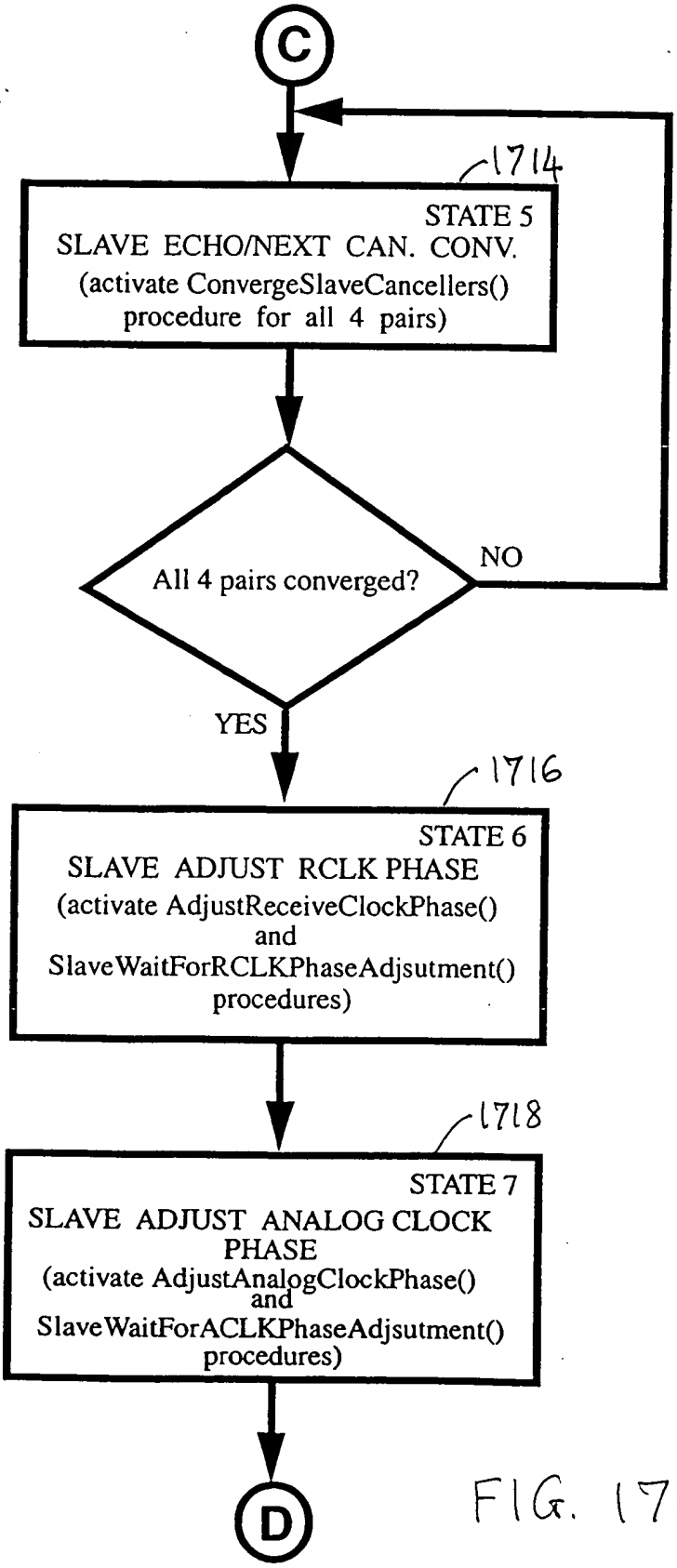


FIG. 17D

0045240 - 24/05/96

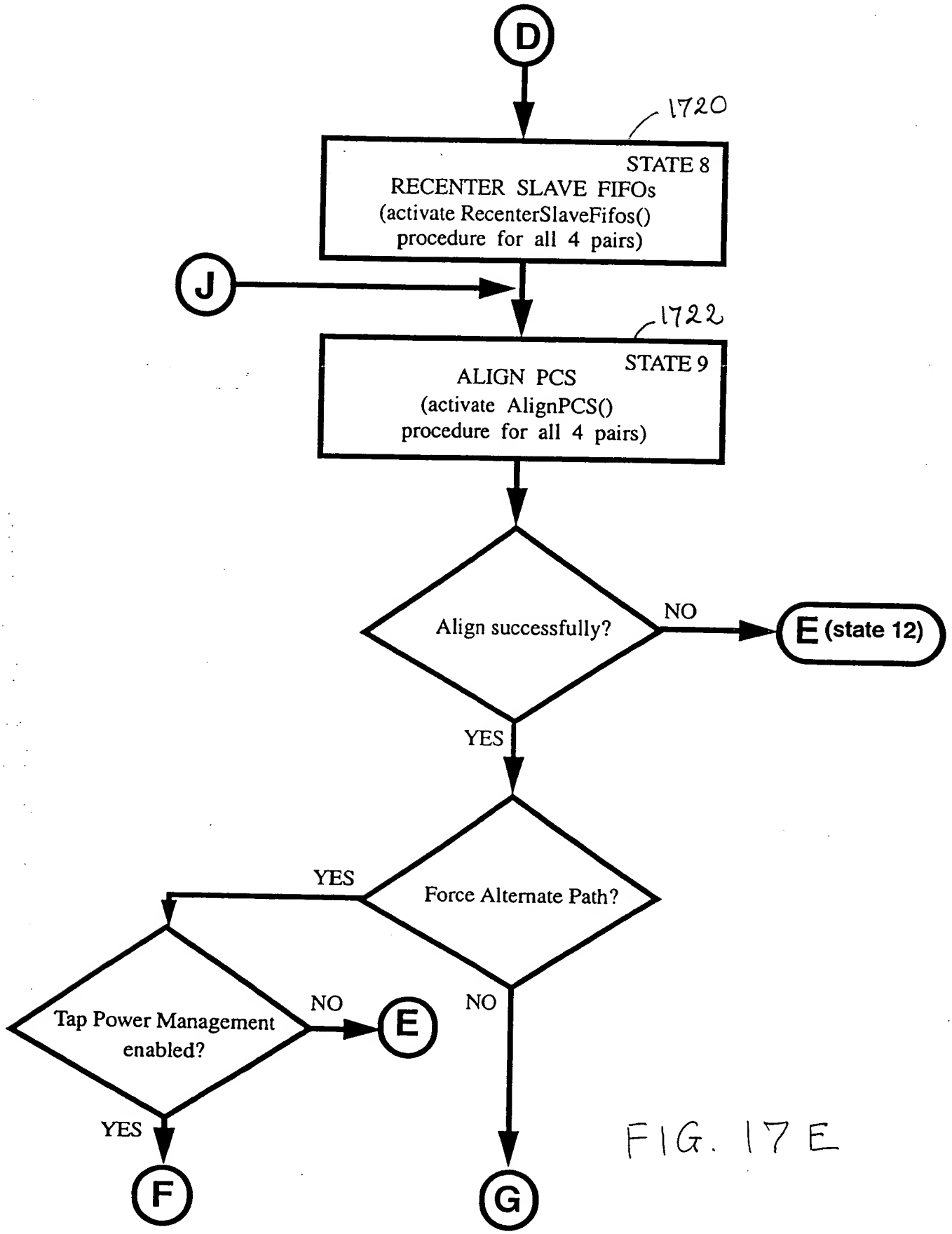

D
1720
STATE 8
RECENTER SLAVE FIFOs
(activate RecenterSlaveFifos()
procedure for all 4 pairs)
J
1722
STATE 9
ALIGN PCS
(activate AlignPCS()
procedure for all 4 pairs)
Align successfully?
NO
E (state 12)
YES
Force Alternate Path?
YES
NO
Tap Power Management
enabled?
NO
E
YES
F
G

FIG. 17E

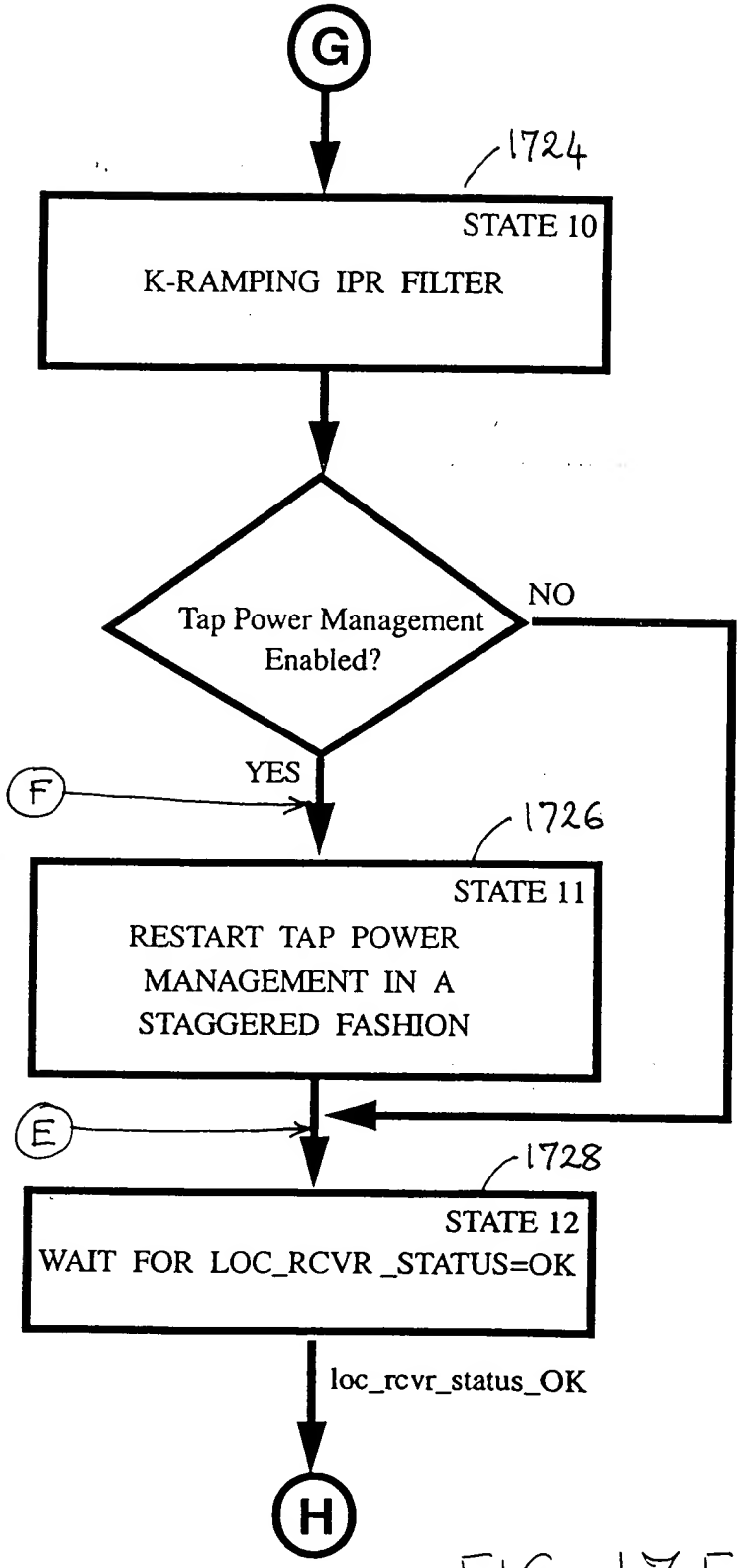


FIG. 17F

09559294 - 042400

09557924 - 042400

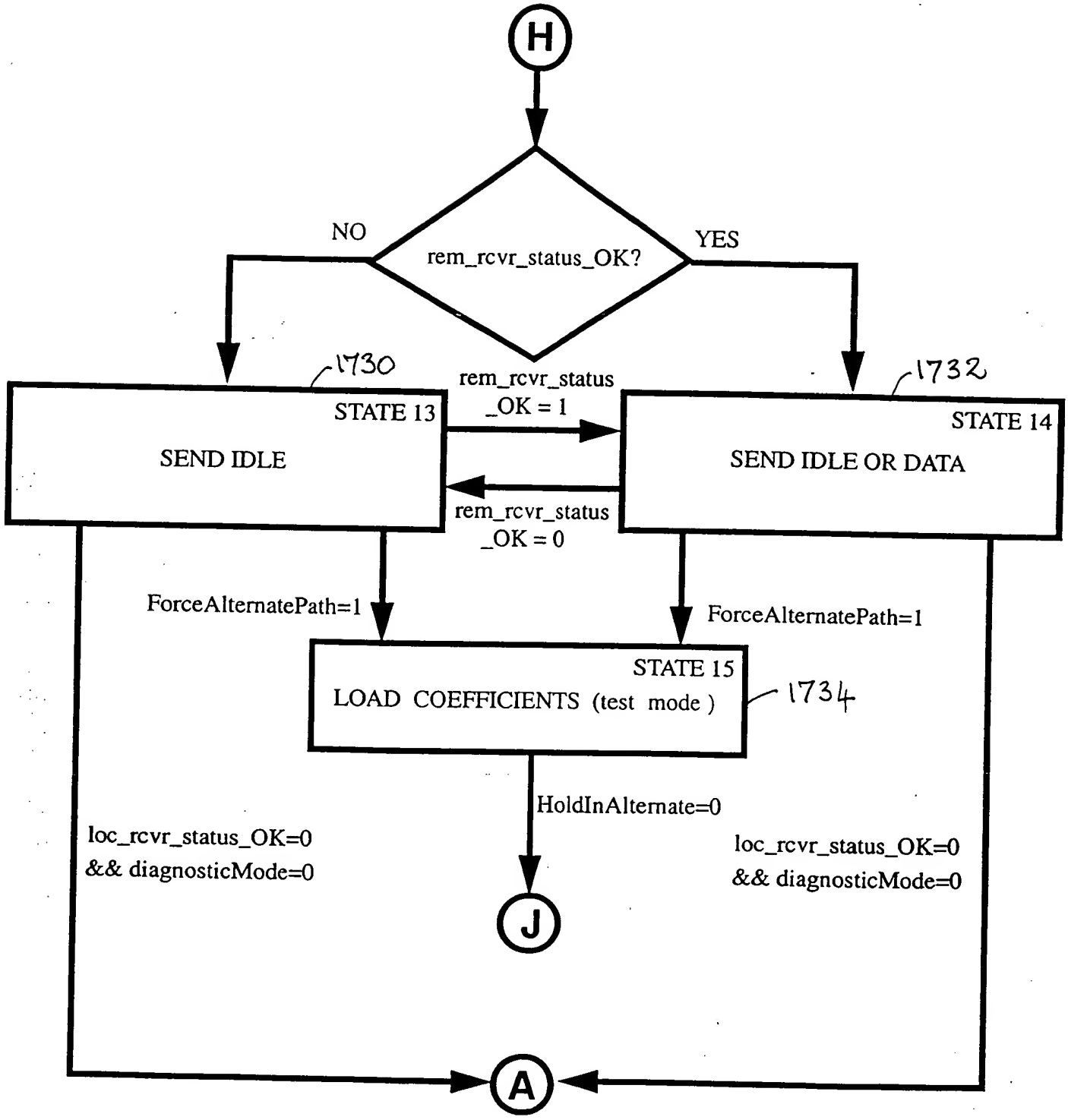


FIG. 17G

0054210 4525456

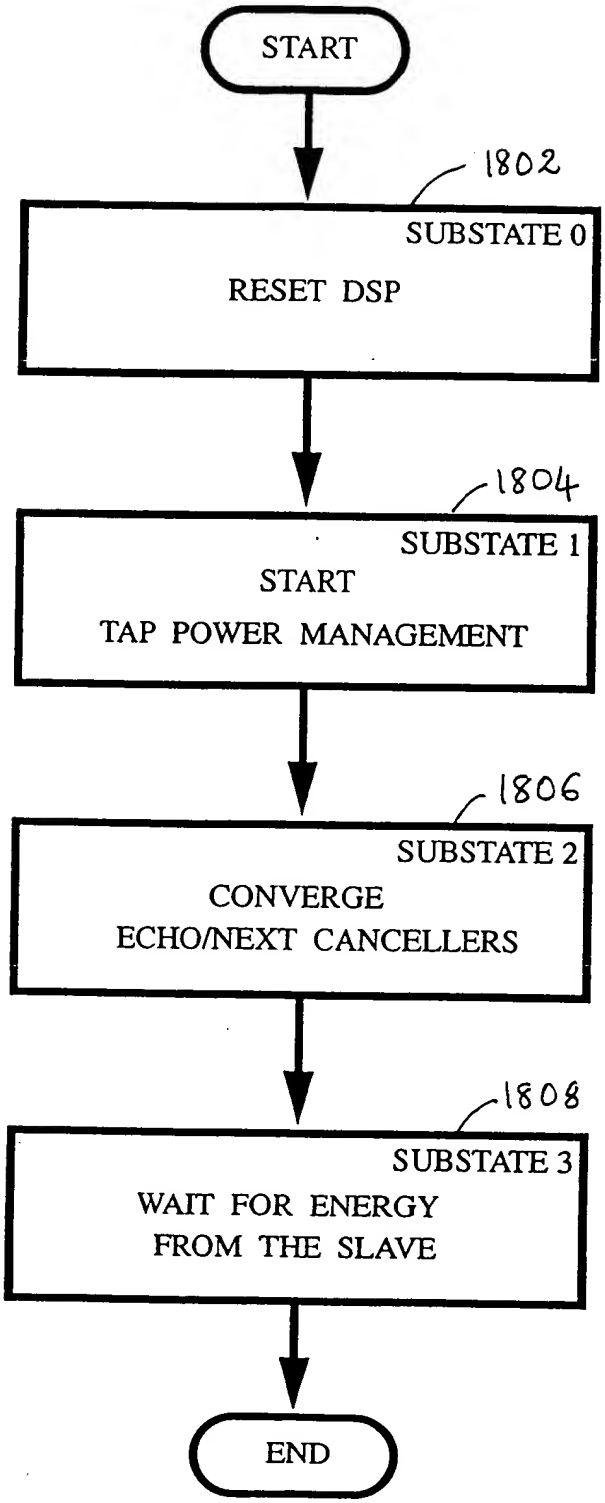


FIG. 18

0055424-042408

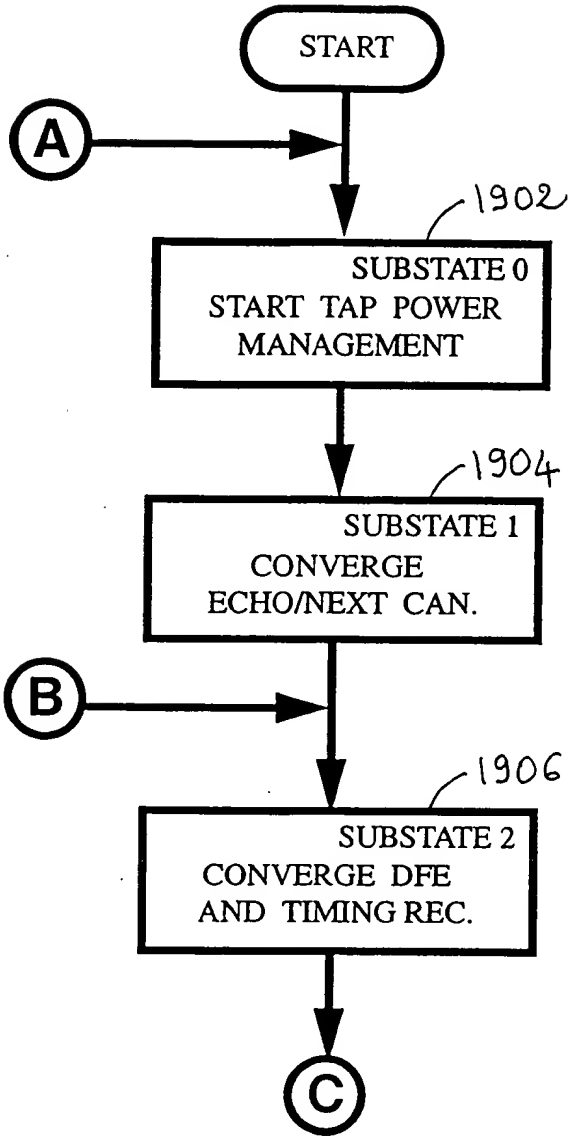


FIG. 19A

08624904 - 2755249

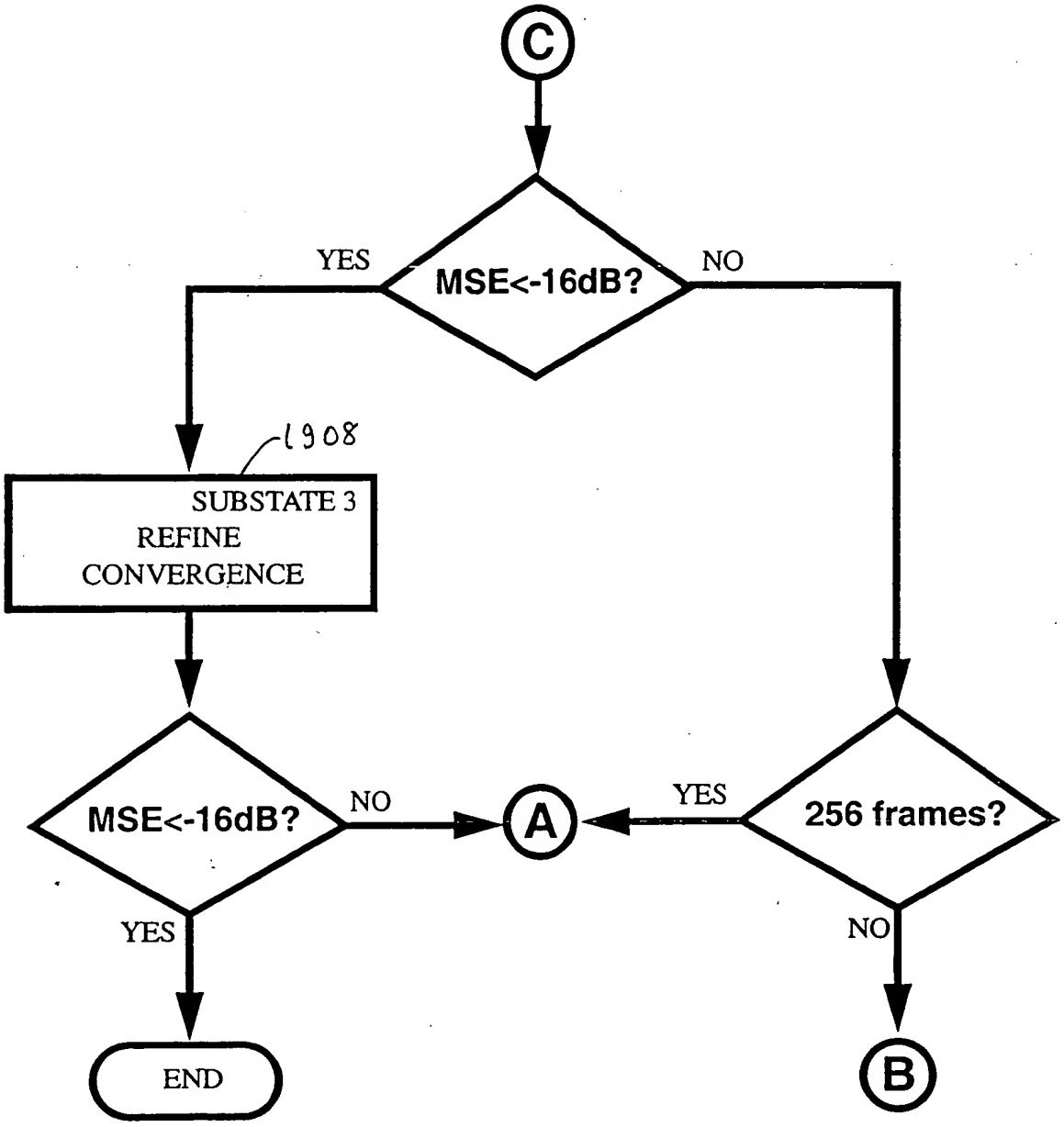


FIG. 19B

0044240 4725560

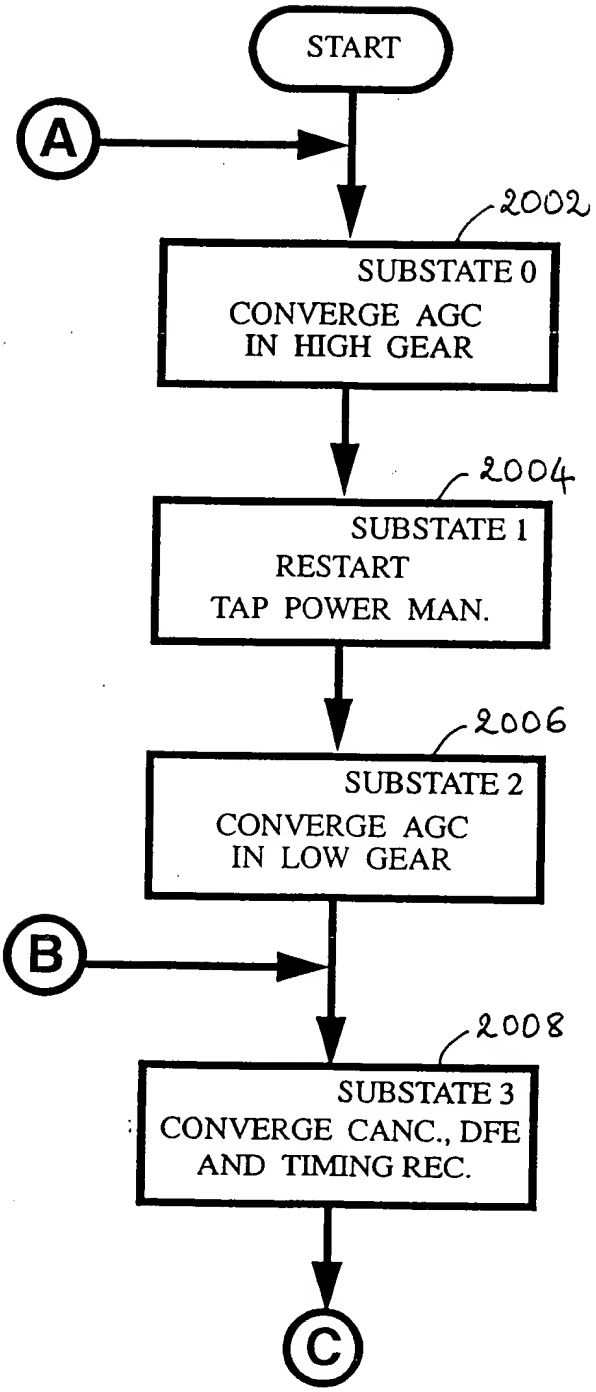


FIG. 20A

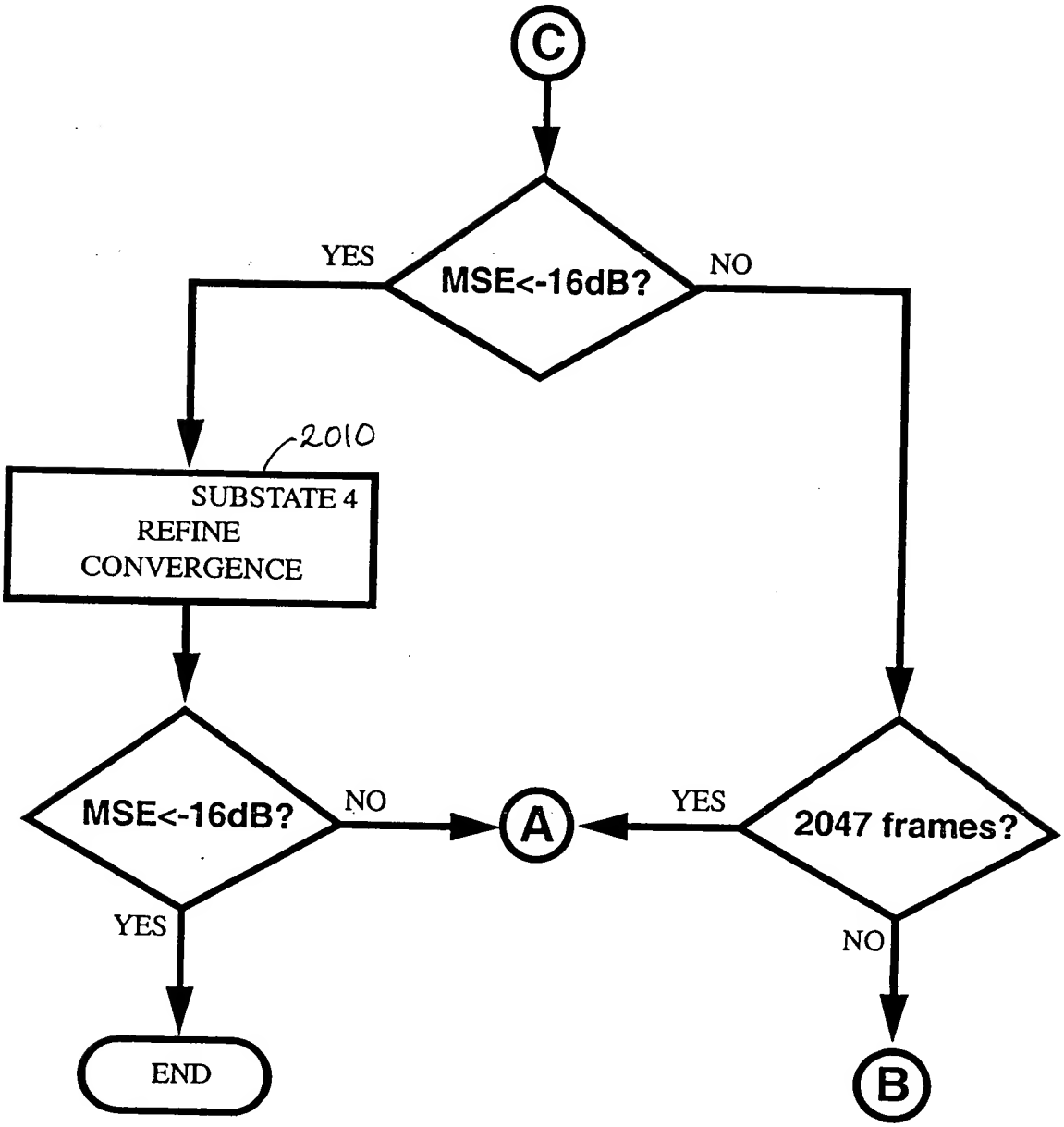

C
MSE<-16dB?
YES
NO
2010
SUBSTATE 4
REFINE
CONVERGENCE
MSE<-16dB?
NO
YES
A
2047 frames?
YES
NO
END
B

FIG. 20B

0054254 - 0404400

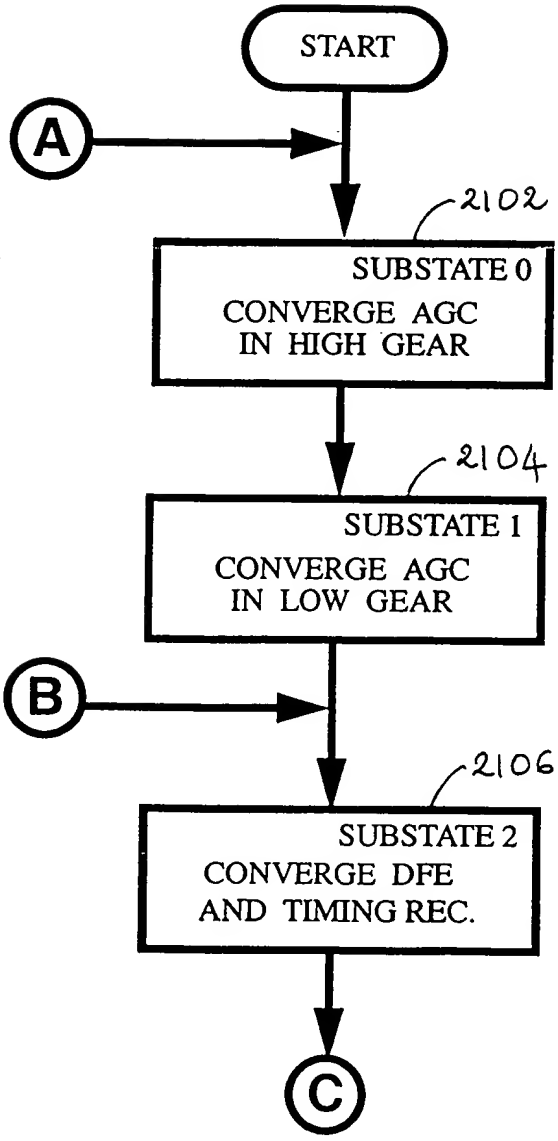


FIG. 21A

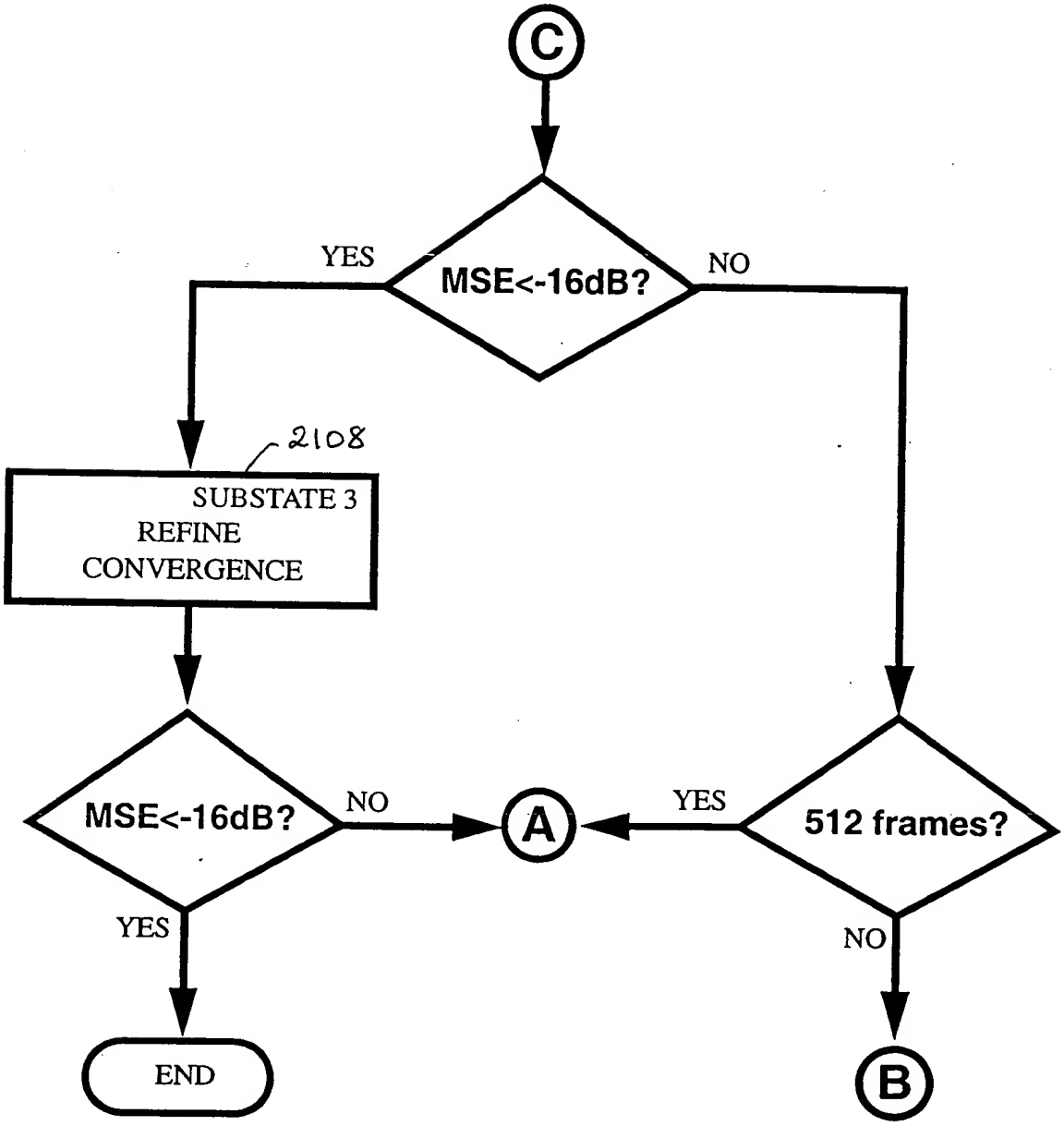

C
MSE<-16dB?
YES
NO
2108
SUBSTATE 3
REFINE
CONVERGENCE
MSE<-16dB?
NO
A
YES
512 frames?
YES
NO
END
B

FIG. 21B

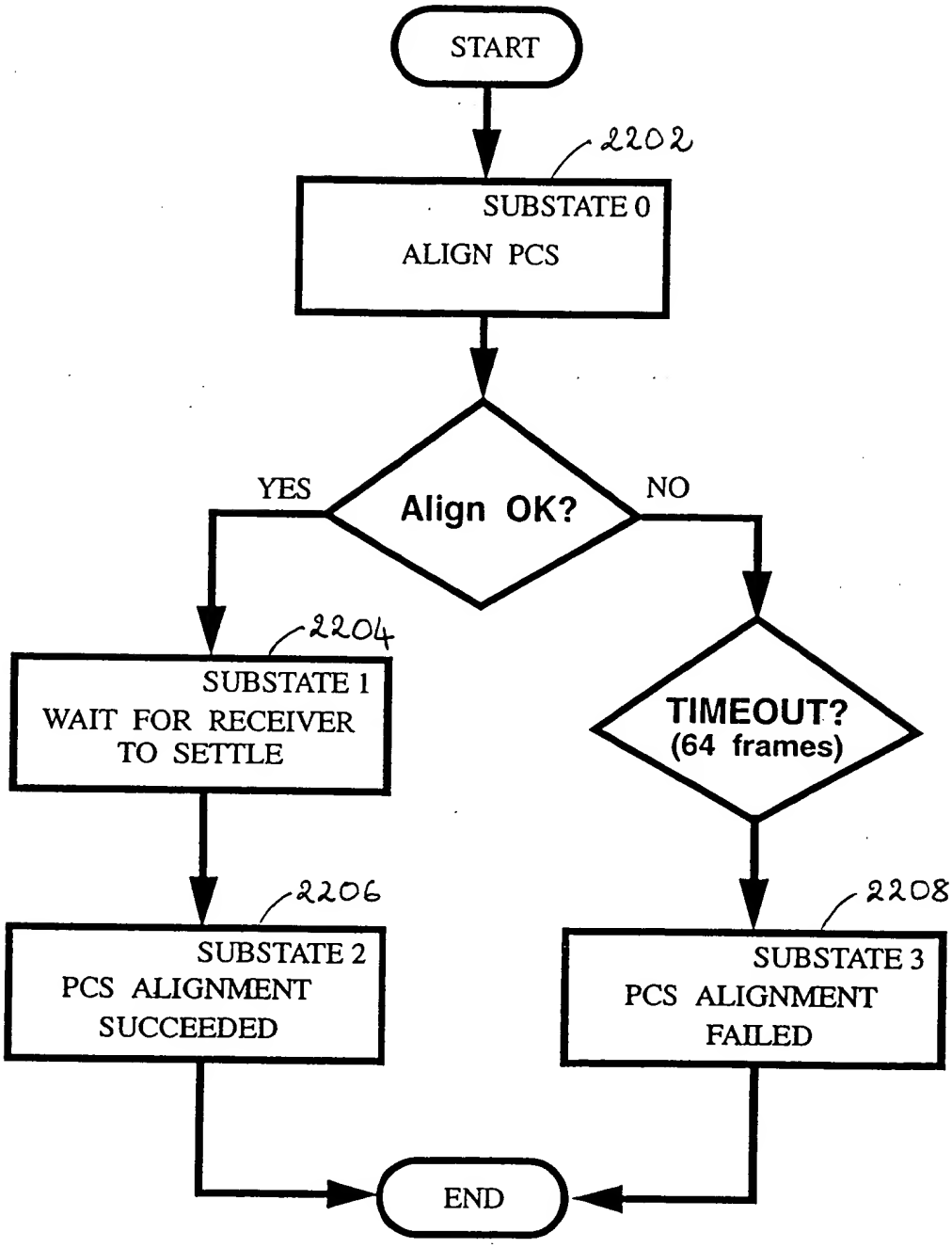

START
2202
SUBSTATE 0
ALIGN PCS
Align OK?
YES
NO
2204
SUBSTATE 1
WAIT FOR RECEIVER
TO SETTLE
TIMEOUT?
(64 frames)
2206
SUBSTATE 2
PCS ALIGNMENT
SUCCEEDED
2208
SUBSTATE 3
PCS ALIGNMENT
FAILED
END

FIG. 22

D95/2574.042400

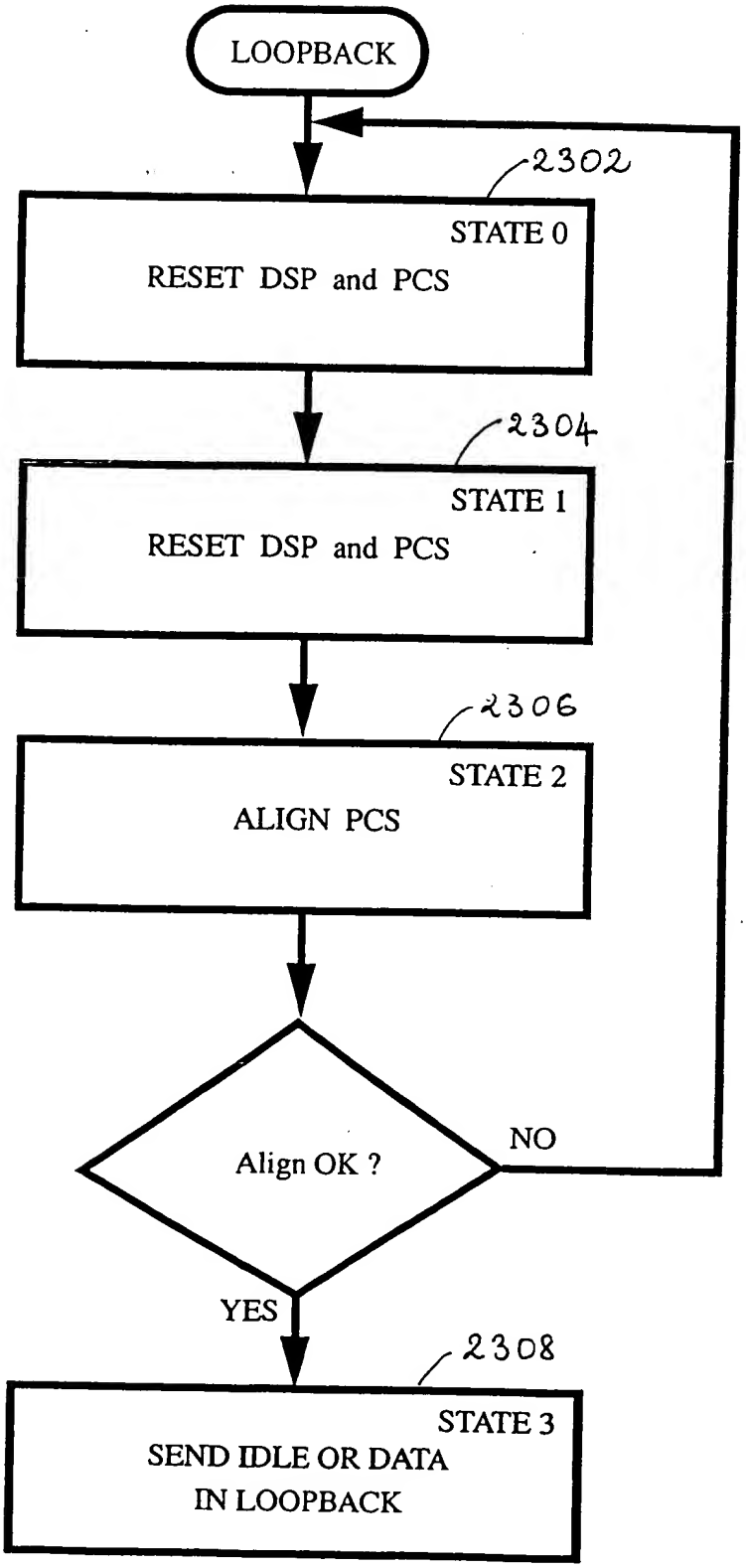


FIG. 23

08554254 - 042400

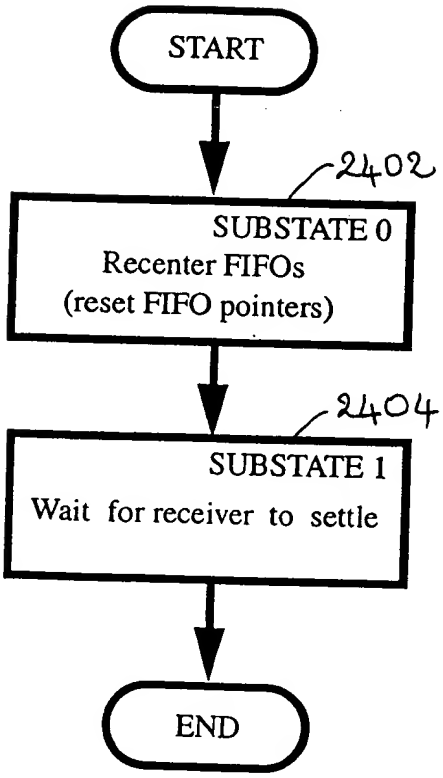


FIG. 24

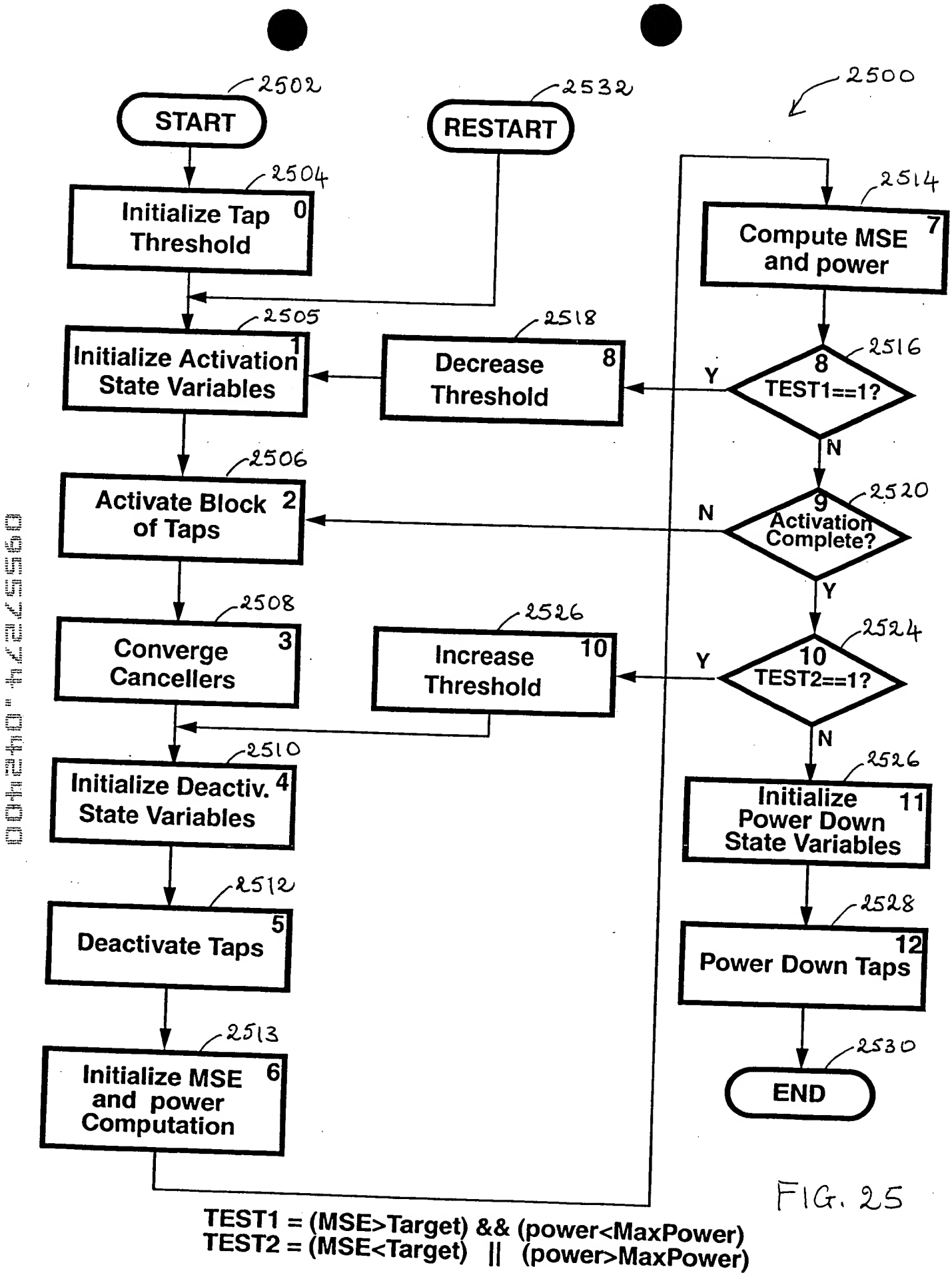

2500
2502
START
2532
RESTART
2504
Initialize Tap Threshold 0
2505
Initialize Activation State Variables 1
2506
Activate Block of Taps 2
2508
Converge Cancellers 3
2510
Initialize Deactiv. State Variables 4
2512
Deactivate Taps 5
2513
Initialize MSE and power Computation 6
2514
Compute MSE and power 7
2516
8 TEST1==1?
Y
2518
Decrease Threshold 8
N
2520
9 Activation Complete?
N
Y
2524
10 TEST2==1?
Y
2526
Increase Threshold 10
N
2526
Initialize Power Down State Variables 11
2528
Power Down Taps 12
2530
END
TEST1 = (MSE>Target) && (power<MaxPower)
TEST2 = (MSE<Target) || (power>MaxPower)

FIG. 25

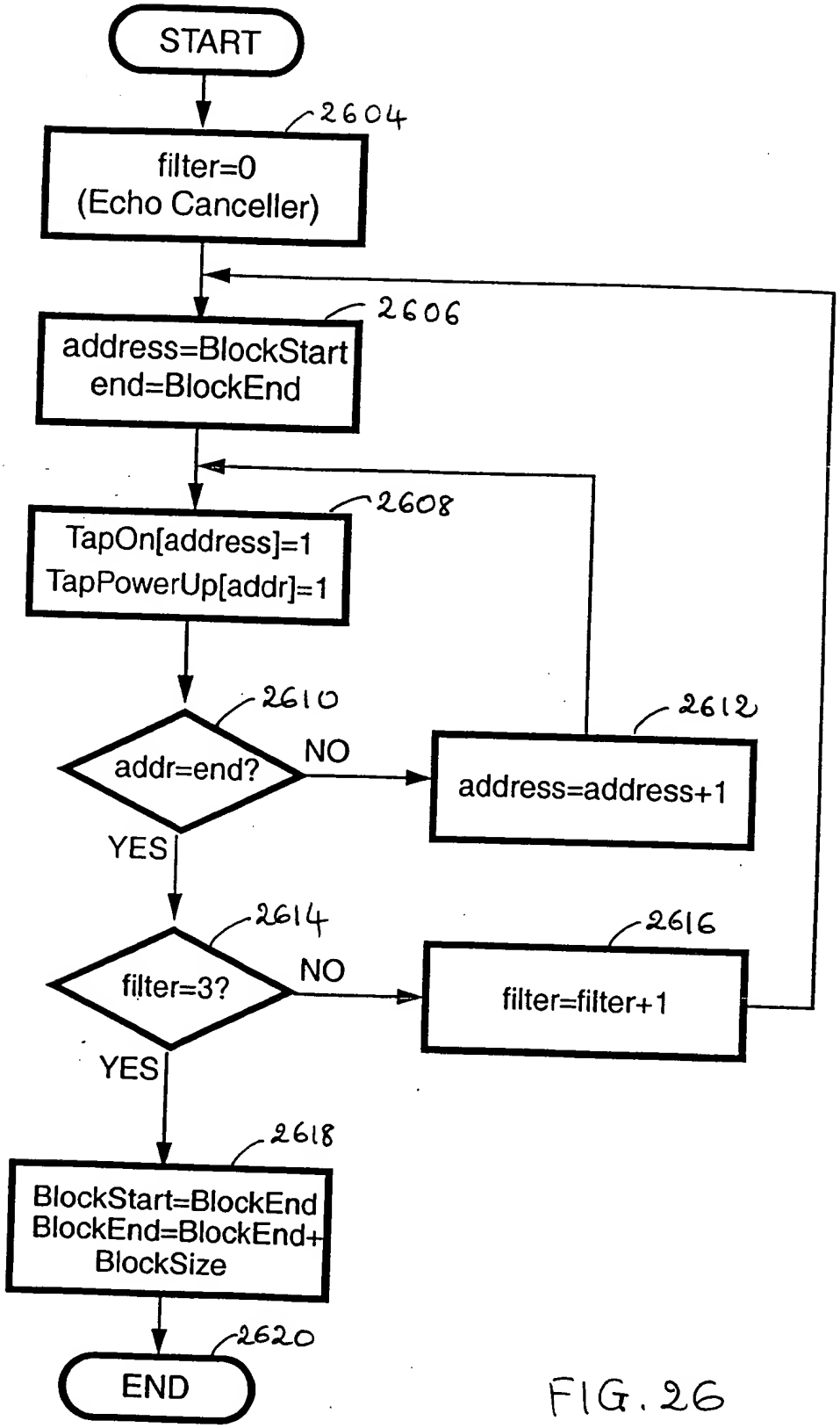

START
2604
filter=0
(Echo Canceller)
2606
address=BlockStart
end=BlockEnd
2608
TapOn[address]=1
TapPowerUp[addr]=1
2610
addr=end?
NO
2612
address=address+1
YES
2614
filter=3?
NO
2616
filter=filter+1
YES
2618
BlockStart=BlockEnd
BlockEnd=BlockEnd+
BlockSize
2620
END

FIG. 26

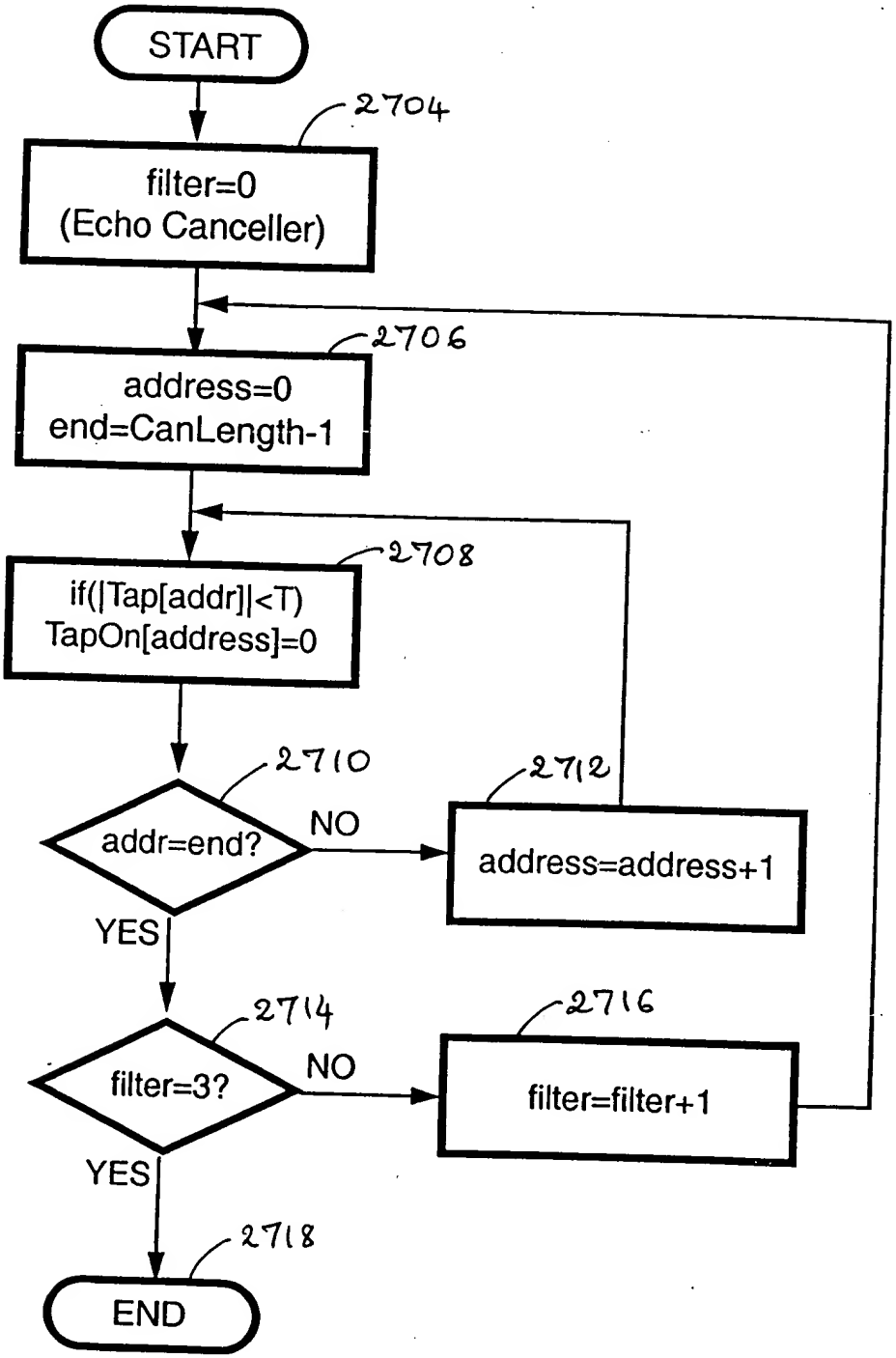

START
2704
filter=0
(Echo Canceller)
2706
address=0
end=CanLength-1
2708
if(|Tap[addr]|<T)
TapOn[address]=0
2710
addr=end?
NO
2712
address=address+1
YES
2714
filter=3?
NO
2716
filter=filter+1
YES
2718
END

FIG. 27

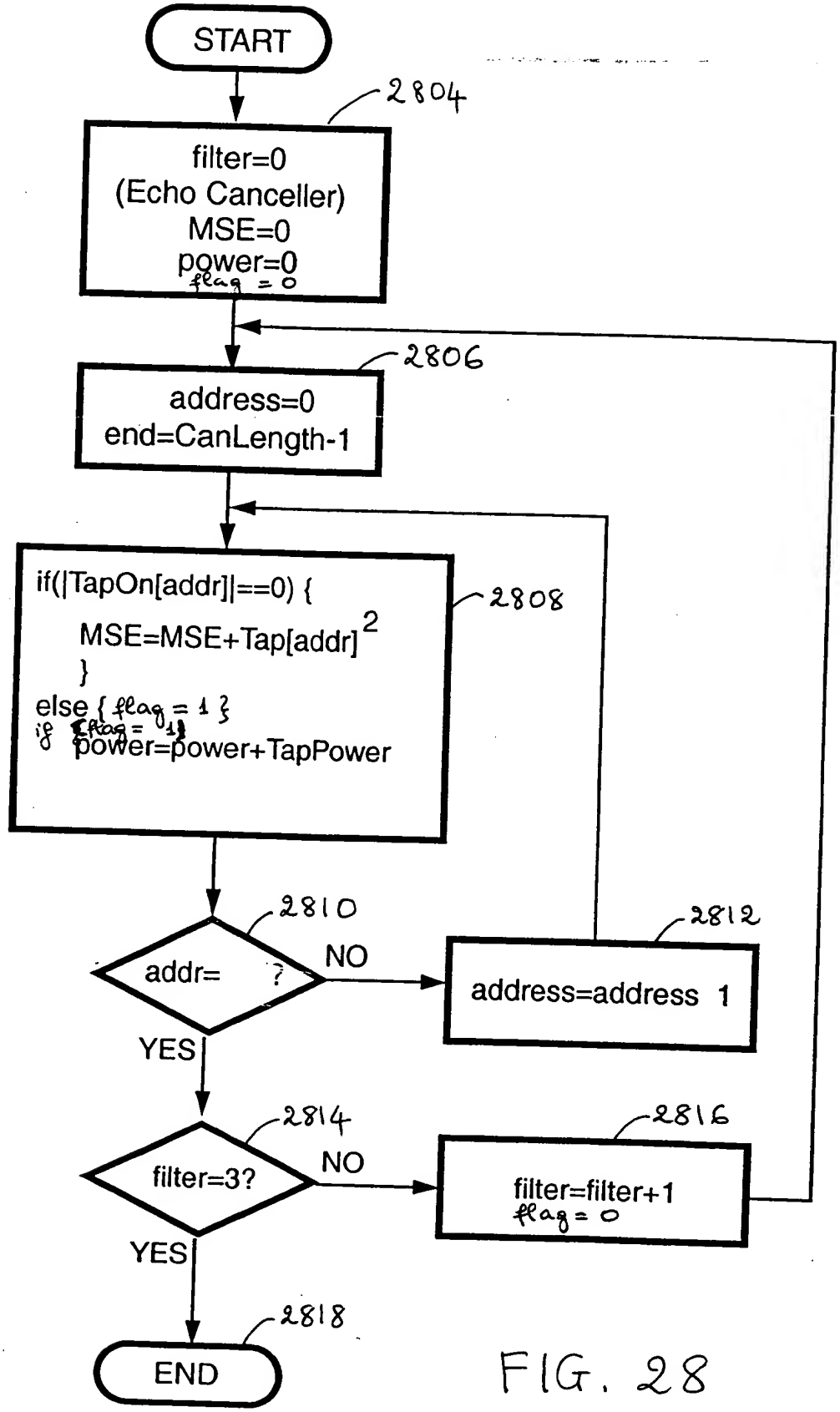

START
2804
filter=0
(Echo Canceller)
MSE=0
power=0
flag = 0
2806
address=0
end=CanLength-1
2808
if(|TapOn[addr]|==0) {
MSE=MSE+Tap[addr]2
}
else { flag = 1 }
if flag = 1
power=power+TapPower
2810
addr= ?
NO
2812
address=address 1
YES
2814
filter=3?
NO
2816
filter=filter+1
flag = 0
YES
2818
END

FIG. 28

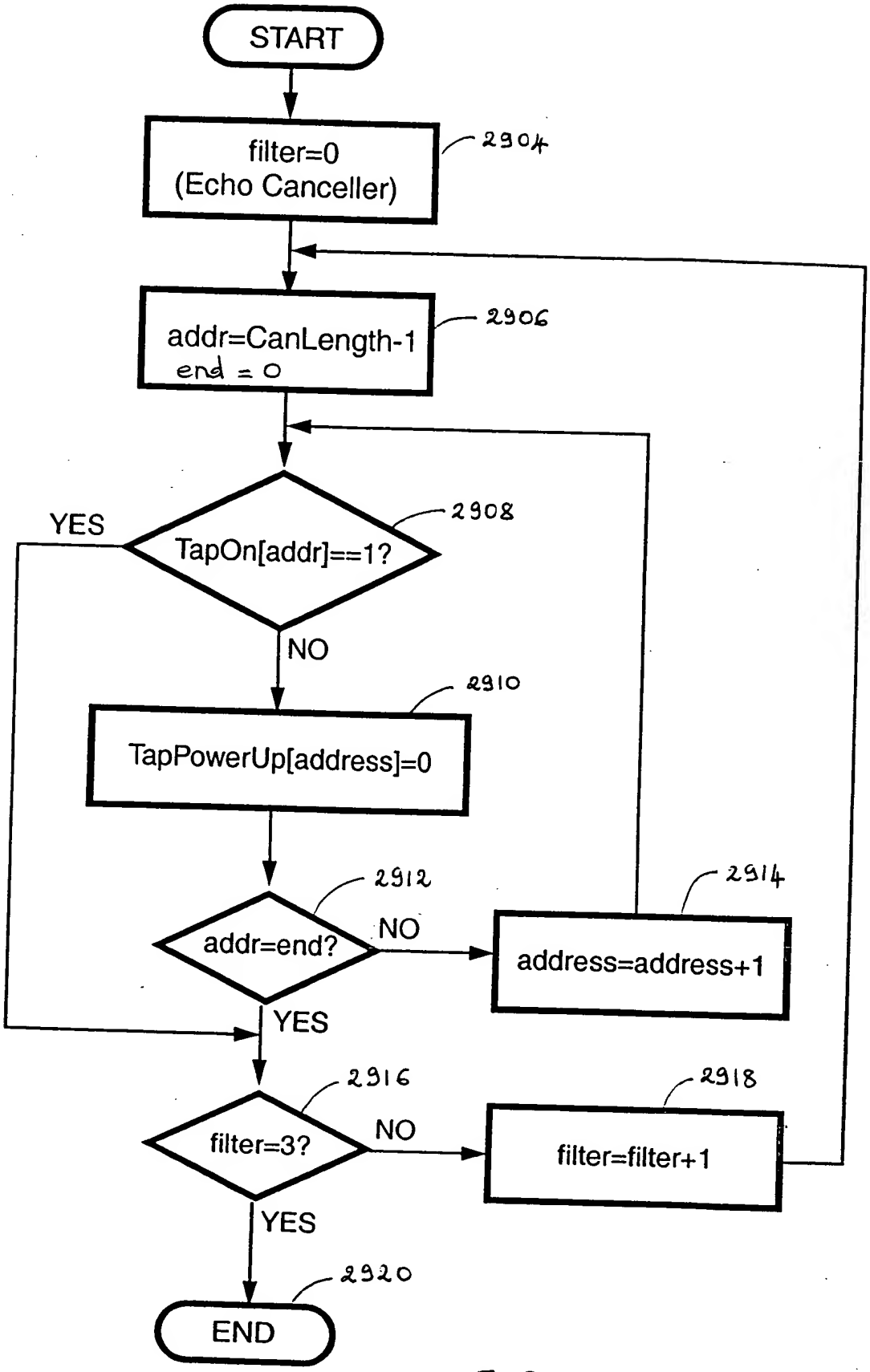

START
filter=0
(Echo Canceller)
2904
addr=CanLength-1
end = 0
2906
TapOn[addr]==1?
2908
YES
NO
TapPowerUp[address]=0
2910
addr=end?
2912
NO
address=address+1
2914
YES
filter=3?
2916
NO
filter=filter+1
2918
YES
END
2920

FIG. 29